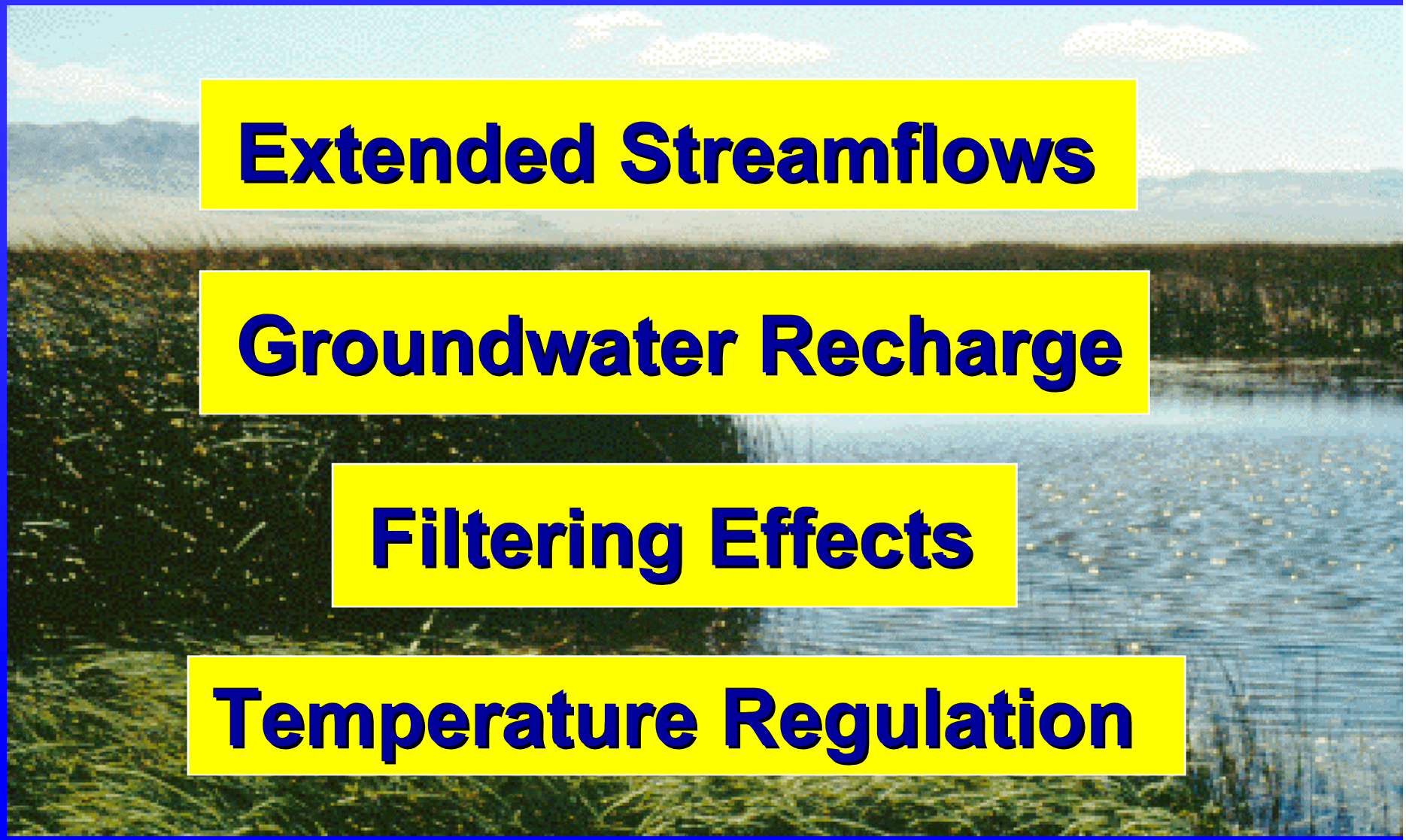
PFC - California

I. Introduction to Riparian Areas and PFC

Keeping Water on the Land



Riparian Areas Reflect Health of the Watershed

- Small percentage of landscape, but many benefits
- First features to show damage from improper management
- Collaborative approaches are needed:
  - Significant portion of public lands below potential
  - Riparian areas pass through multiple ownerships

Effective Riparian Management

- Considers the entire drainage area
- Involves all potentially impacted individuals and interests
- Based on a common vision, common goals, and common sense
- Facilitates communication and decisionmaking by using a common vocabulary and generally accepted methods of evaluation

Effective Riparian Management

- Common Goals, Objectives, Management Direction, and… Common Sense
- Common Vocabulary and Definitions
- Common Methods for Evaluating Health and Condition
- High Probability for Positive Change At Reasonable Investment
- Encourage Voluntary Restoration of Private Lands

Effective Riparian Management

- Resolution At The Ground Level By Those Most Affected
- Interdisciplinary Expertise and Local Interest
- **Results**

Effective Riparian Management

- Utilizes an interdisciplinary approach
- Practices are technically sound, and economically and environmentally feasible/defensible
- Continues to monitor conditions and reevaluates goals and strategies in light of changes

Texas Creek, Colorado

September 1976

Texas Creek, Colorado
September 1976

Nonfunctional

Texas Creek, Colorado

June, 1978

Texas Creek, Colorado
June 1978

Functioning-At-Risk

Texas Creek, Colorado

October, 1978

Texas Creek, Colorado
October 1978

Properly Functioning

Texas Creek, Colorado

July, 1987

Texas Creek, Colorado
July 1987

Properly Functioning

Proper

Functioning

Condition

Who developed the PFC methodology?

- In 1996, the Bureau of Land Management and the U.S. Forest Service formally launched their "Accelerating Cooperative Riparian Restoration and Management" initiative;
- The USDA - Natural Resources Conservation Service was identified as a "principle partner" in the initial effort.

"Accelerating Cooperative Riparian Restoration and Management"

Key Components of the Initiative are:

- Formation of a National Riparian Service Team (Prineville, OR);
- Formation of a network of riparian coordinators to facilitate coordination and technology transfer;
- An aggressive PFC training program

Cooperating Agencies in California

- Bureau of Land Management
- USDA Forest Service
- Natural Resources Conservation Service
- University of California
- University of California Cooperative Extension

Who else has been involved in PFC in California?

- Local CRMP Groups (e.g. Scott River, Panoche-Silver Creek, Pine Creek)
- Resource Conservation Districts
- U.S. Fish and Wildlife Service
- California Resources Agency
- California Native Plant Society
- California Cattlemens Association

PFC training in California

- **Since 1997, approx. 18 training sessions have been conducted:**
  - National Forest (Los Padres, Eldorado, Cleveland, Sequoia, etc.)
  - Calveras Big Trees SP
  - CRMPs (Scott River, Arroyo Pasajaro, Modoc/Warner Mtns)
  - NRCS/RCD/UCCE (Quincy, Willows, Jamestown, San Andreas)
  - Others (UC Davis)

PFC References

- **TR 1737-9: Riparian Area Management - Process for Assessing Proper Functioning Condition (BLM, 1993)**
- **TR 1737-11: Riparian Area Management - Process for Assessing Proper Functioning Condition for Lentic Riparian-Wetland Areas (BLM, 1994)**
- **TR 1737-15: Riparian Area Management- A User Guide to Assess Proper Functioning Condition and Supporting Science for Lotic Areas (BLM et al., 1998)**

What is PFC?

- **A qualitative screening tool for assessing the condition of riparian-wetland areas.**

- **The term PFC is used to describe both:**
  - **A defined on the-ground condition of a riparian-wetland area..**
  - **The assessment process (methodology)**

What is PFC?

- **PFC on the ground condition refers to how well the physical processes are functioning**

- **PFC Assessment refers to a consistant approach for considering the following attributes and processes in order to determine the condition of riparian wetland areas -**
  - **Hydrology**
  - **Vegetation**
  - **Erosion/Deposition (soils)**

PFC On The Ground -

- PFC is a state of resiliency that will allow a riparian-wetland area to hold together during high flow (25 to 30 year) events with a high degree of reliability.
- This resiliency allows an area to then produce desired values, such as fish habitat, neotropical bird habitat, basketweaving, or forage, over time.
- Riparian areas that are not functioning properly cannot sustain these values

The PFC Methodology -

- **Is a qualitative assessment based on quantitative science;**
- **Is intended for use by interdisciplinary teams with local on the ground experience.**
- **Quantitative techniques are encouraged in conjunction with the PFC assessment for:**
  - Individual calibration
  - Where answers are uncertain
  - Where experience is limited

The PFC Methodology -

- Utilizes a 17-point checklist to help guide teams through a systematic evaluation of the condition (overall health) of the riparian-wetland system.

The PFC Methodology -

- **Relies on the collective professional expertise/judgement of the team to review results and assign a PFC rating:**
  - **Functioning Properly**
  - **Functioning -At Risk**
    - Upward Trend
    - Downward Trend
  - **Nonfunctioning**

PFC helps

- Determine potential and capability
- Define issues that need to be addressed
- Determine appropriate monitoring
- Select appropriate management practices

PFC Helps Determine

- How well the physical processes are working
- How well the riparian-wetland area will withstand the energies of a 25 to 30 year event
- The system's basic ability to maintain and produce both physical and biological values

PFC isn't

- A replacement for biological inventory or monitoring protocols
- The only methodology for determining the health of riparian or aquatic components of the riparian-wetland area

PFC does not equal

- Potential Natural Community (PNC)
- Desired Plant Community (DPC)
- Desired Future Condition (DFC)

PFC does not replace existing

- Forest Plan Standards or Guidelines
- BLM Land Use Plan Decisions
- Legal Requirements, e.g., ESA, CWA

Riparian Proper Functioning Condition Assessment

- Common Vocabulary
- Communication Tool
- Planning Tool

PFC - California

II. Definition and Concepts

PFC

Concepts and Definitions

Wetland

- Areas inundated or saturated by surface or ground water
- Supports a prevalence of vegetation suited to saturated soils
- Includes marshes, shallow swamps, sloughs, lakeshores, wet meadows, springs, seeps, and riparian areas

Riparian Area

- Transition between the aquatic (saturated) and upland areas
- Vegetation and physical (soil) characteristics reflect the influence of permanent surface or ground water
- Land along streams, ponds, marshes, springs, and seeps are examples

Riparian-Wetland Types

- Lotic
  - Flowing water systems (streams)
    - » Defined channel
    - » Gradient
- Lentic
  - Standing surface water
    - » Lakes, reservoirs, ponds, marshes
  - Ground Water
    - » Seeps and springs
    - » Bogs and wet meadows

Standing Water (Lentic) Systems

- **Lakes**
- **Ponds**
- **Seeps**
- **Meadows**

Mono Lake, Mono Co.

Flowing Water (Lotic) Systems

- Rivers
- Streams
- Springs

Sulfur Creek, Sonoma County

Perennial Stream

- Essentially flows year long
- Usually gains water from ground water
- Maintains base flow during dry periods

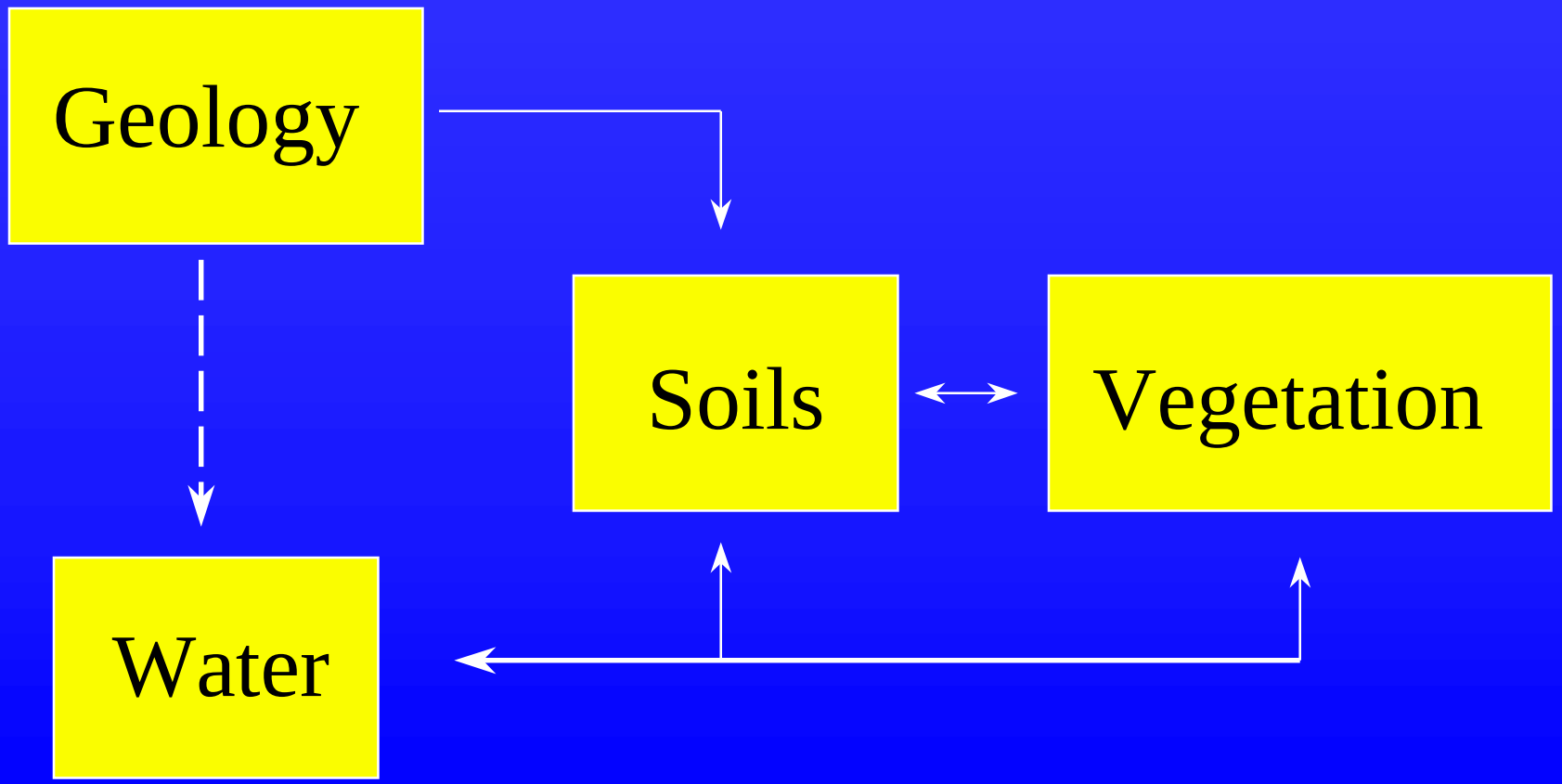
Ephemeral Stream

- A stream that flows only in direct response to precipitation
- Channel is above the water table at all times

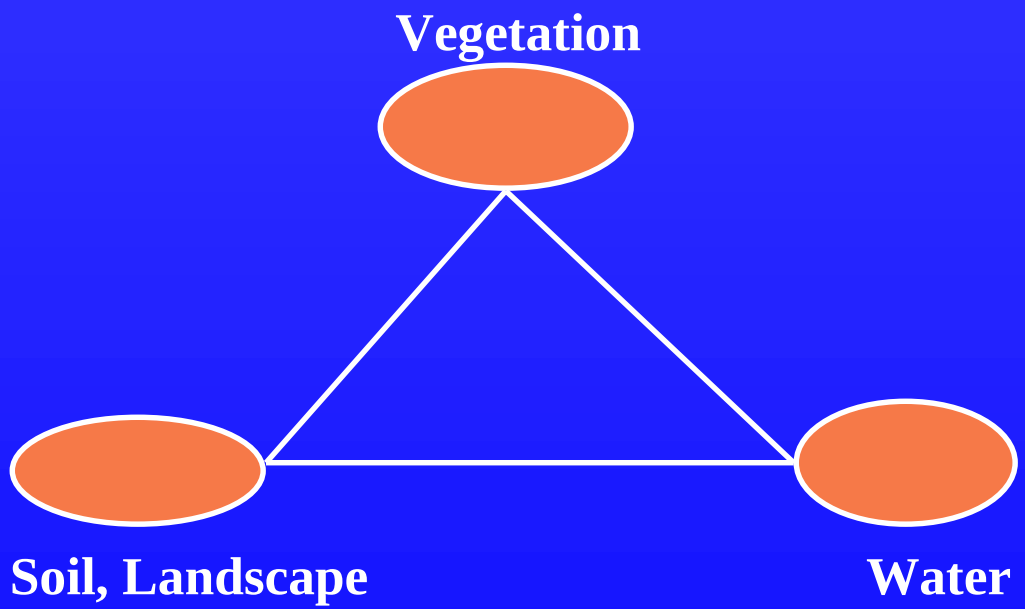
Intermittent or Seasonal Stream

- Flows only at certain times of the year when it receives water from springs or from some surface sources such as melting snow
- Interrupted or discontinuous flow

Natural Riparian Resources



Natural Riparian Resources



Natural Riparian Resources

- **Ecological Framework**
  - Potential
  - Capability
- **Geomorphic Framework**
  - Functioning Condition

Potential

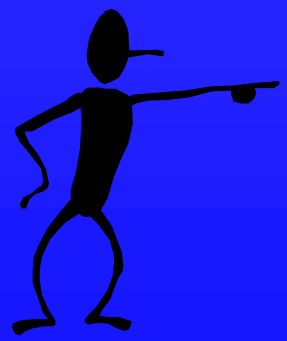
- The highest ecological status a riparian-wetland area can attain given no political, social, or economical constraints.
- Often referred to as the Potential Natural Community.

Capability

- The highest ecological status an area can attain given political, social, or economical constraints (limiting factors).

Proper Functioning Condition (Lotic)

Adequate vegetation, landform or large woody debris present to:



- Dissipate stream energy
- Reduce bank erosion
- Develop root masses that stabilize streambanks
- Aid floodplain development
- Improve floodwater retention and groundwater recharge
- Filter sediment

Proper Functioning Condition (Lotic)

Adequate vegetation, landform or large woody debris present to:

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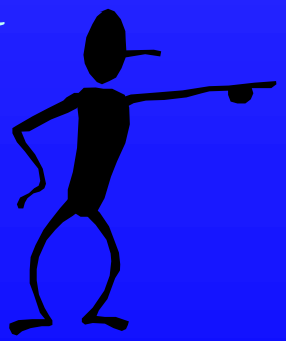


* **Greater channel stability**
* **Improved water quality**
* **Diverse ponding & channel characteristics**
* **Fish & wildlife habitat**
* **Greater biodiversity**

Proper Functioning Condition (Lentic)

Adequate vegetation, landform or debris present to:

- Dissipate energies associated with wind and wave action, and overland flow from adjacent sites
- Reduce shoreline erosion
- Develop root masses that stabilize islands and shoreline features
- Aid floodplain development
- Improve floodwater retention and groundwater recharge
- Filter sediment
- Restrict percolation

Proper Functioning Condition (Lentic)

Adequate vegetation, landform or woody debris present to:

- Dissipate ind/wave/overland flow energies
- Reduce shoreline erosion
- Develop root masses that stabilize islands and shoreline features
- Aid floodplain development
- Improve floodwater retention and groundwater recharge
- Filter sediment

- **Greater shoreline stability**
- **Improved water quality**
- **Diverse ponding characteristics**
- **Fish & wildlife habitat incl. waterbird breeding**
- **Greater biodiversity**

Locke's Pond, Nevada

Proper Functioning Condition

Lacustrine Wetland, New Mexico

Functional - At Risk

Seep Wetland, Nevada

Nonfunctional

Functioning-at-Risk

- Riparian-wetland areas that are in functional condition, but an existing soil, water, or vegetation attribute is impacted which makes the area susceptible to degradation

Functioning-at-Risk

- Examples
  - Shallow rooted annuals
  - Streambank damage
  - Unhealthy woody vegetation

Nonfunctional

- Riparian-wetland areas missing one or more physical attributes and clearly are NOT providing adequate vegetation, landform, or large woody debris to:

Nonfunctional

- dissipate stream energy associated with high flows
- reduce erosion
- maintain water quality

Nonfunctional

- Absence of important attributes
  - an active floodplain
  - stable streambanks
  - permeable soils due to excessive soil compaction

Unknown

Riparian-wetland areas where a lack of information precludes an objective determination of functioning condition.

PFC - California

How Streams Work -

Physical/Hydrology/Vegetation

Attributes and Process List (lotic)

- **Hydrogeomorphic**
  - Ground water discharge
  - Active floodplain
  - Ground-water recharge
  - Flood storage & release
  - Flood modification
  - Bankfull width
  - Width/depth ratio
  - Sinuosity
  - Gradient
  - Stream power
  - Hydraulic controls
  - Bed elevation
- **Vegetation**
  - Community types
  - Community type distribution
  - Surface Density
  - Canopy
  - Recruitment/reproduction
  - Survival
  - Community dynamics & succession
  - Sediment

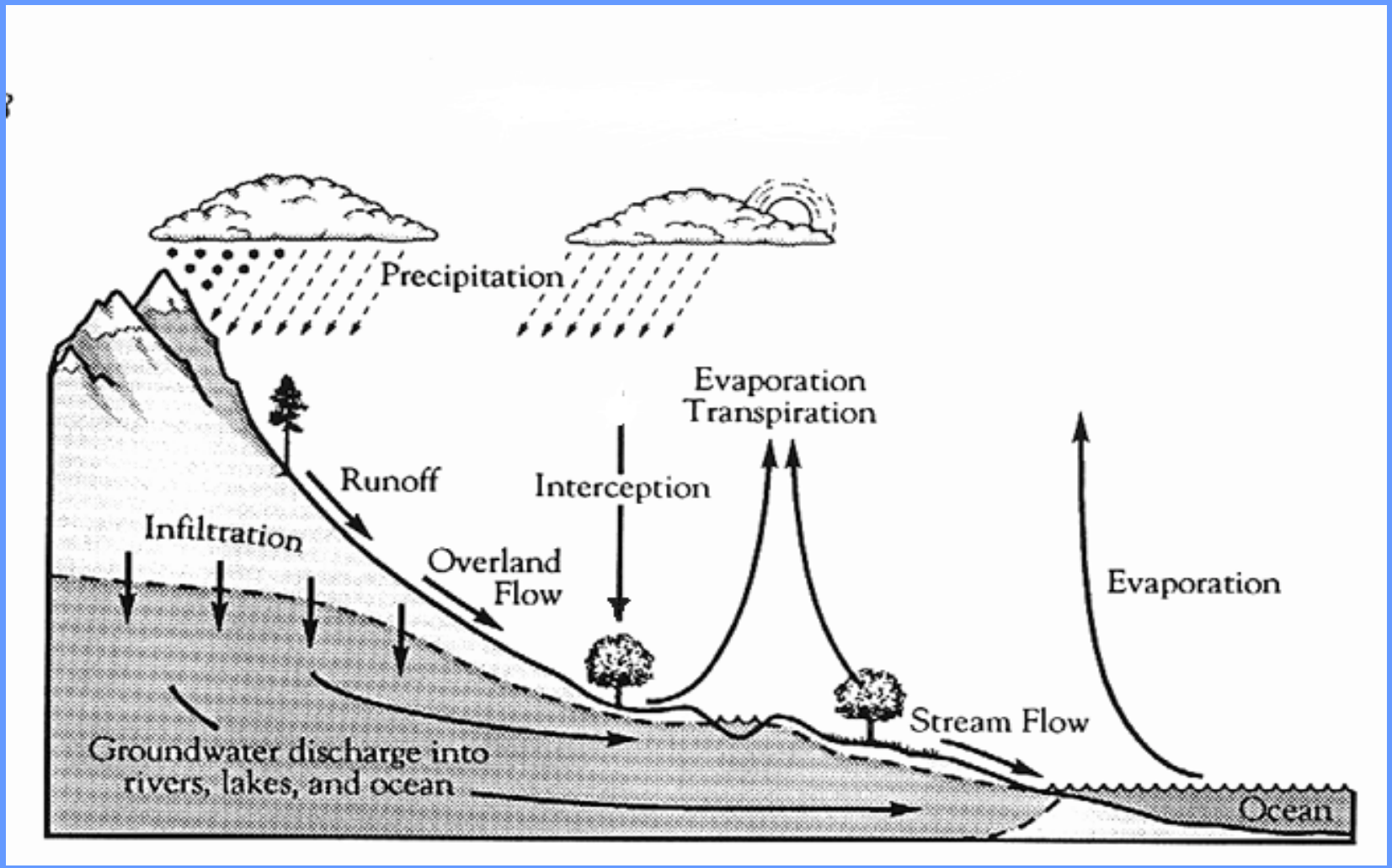
Attributes and Process List (lotic)

- **Erosion/Deposition**
  - Bank stability
  - Bed stability (bed transport rate)
  - Depositional features
- **Soils**
  - Soil type
  - Distribution of aerobic/anaerobic soils
  - Capillarity
  - Annual pattern of soil water states

Water

- Part of all physical and biological processes
  - Physical and Chemical Weathering
  - Soil Formation
  - Essential for all plants and animals
  - Energy for Sediment Transport

Hydrology



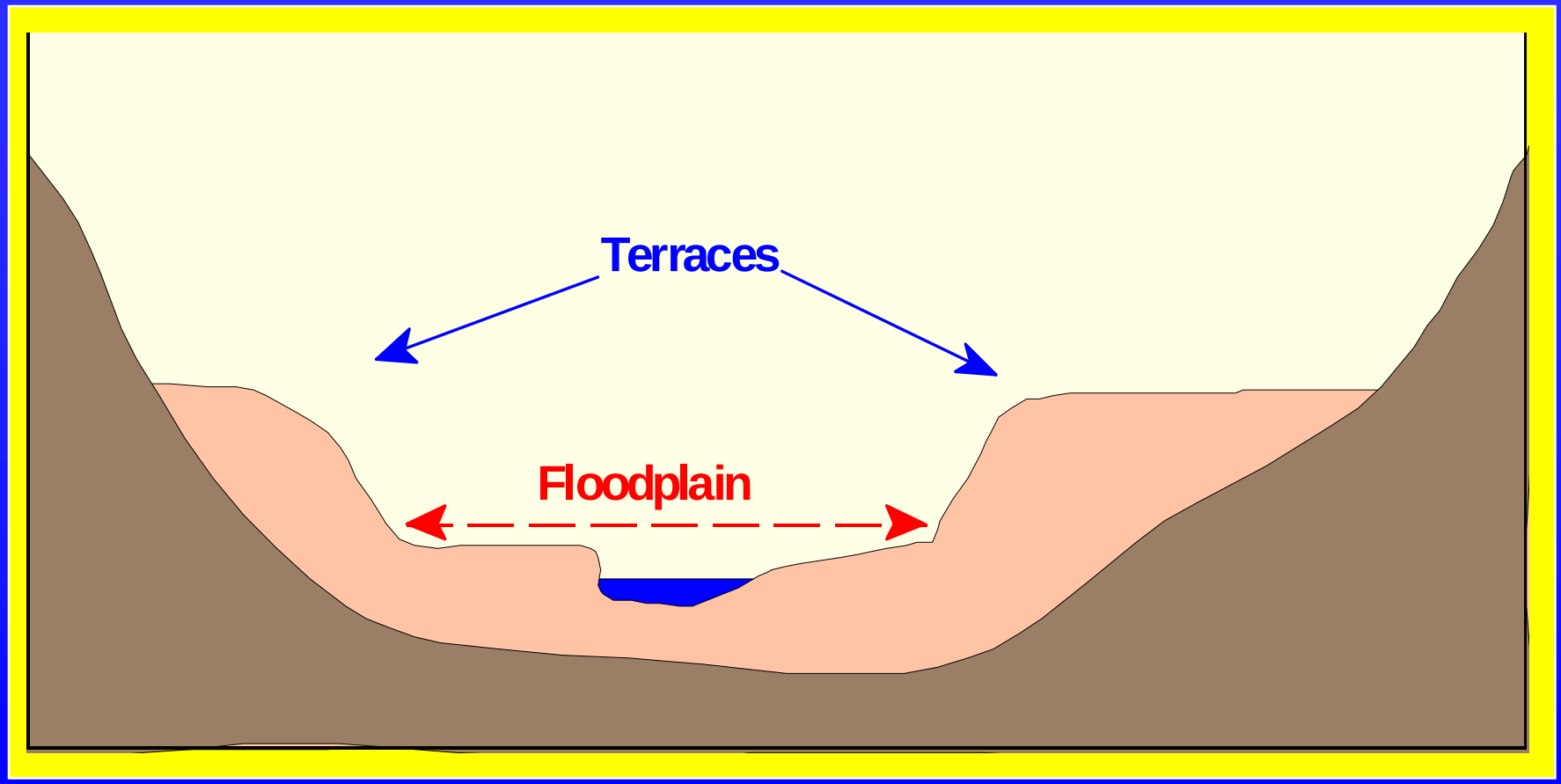
(Page, 1986)

Floodplain

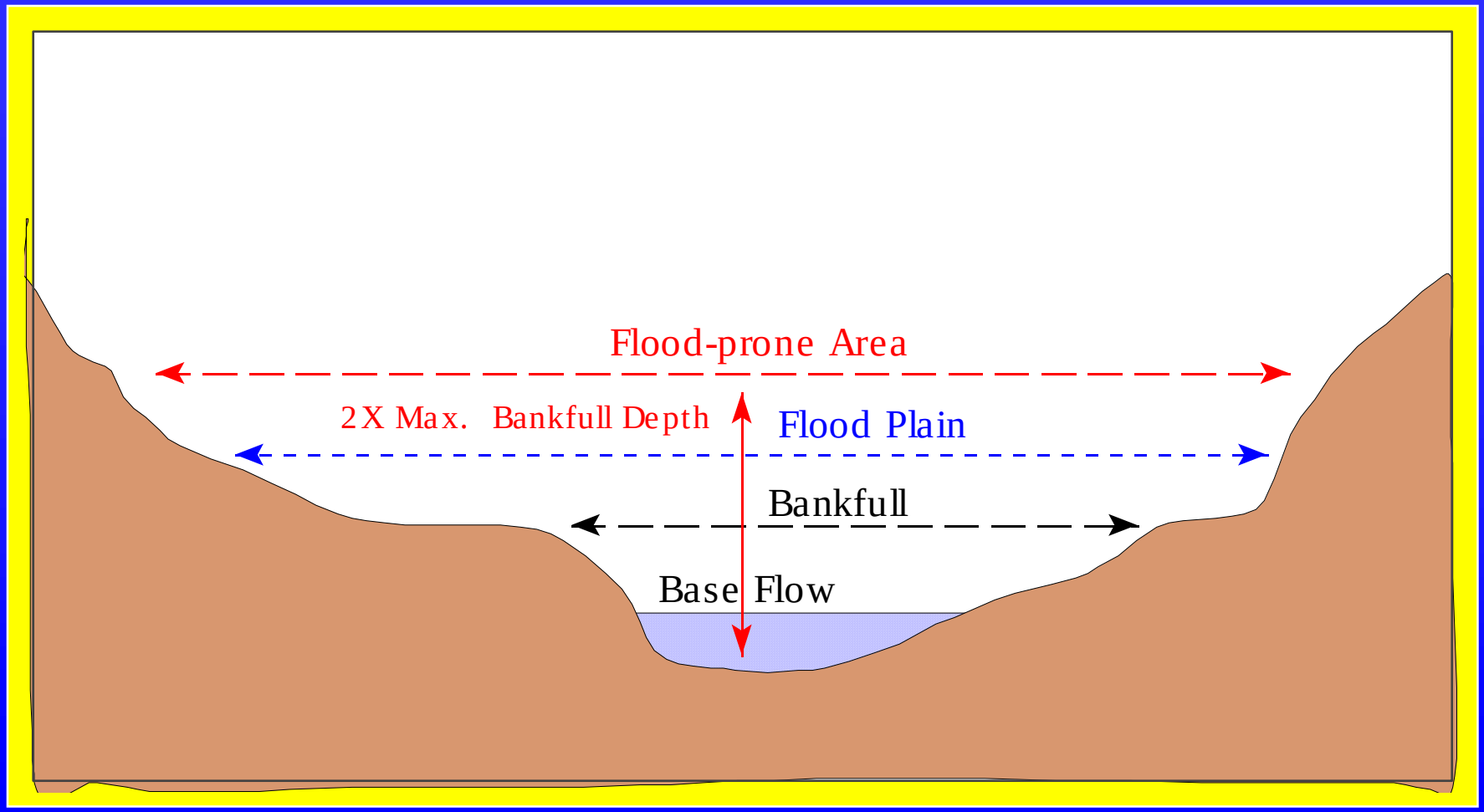
- Level area near a stream channel
- Flooded during moderate events
- Constructed by the stream
- In the present climate
- Should not be confused with “terraces” (abandoned floodplains)

(Leopold, 1994)

Floodplain



Channel Cross-Section



Bankfull Discharge

- **Results in the average geomorphologic channel characteristics**
  - **Moves sediment**
    - Forms and removes bars
    - Forms or changes bends and meanders
  - **Recurs 2 out of every 3 years on average**

CHANNEL-FORMING FLOWS

DOMINANT DISCHARGE

The discharge responsible for the largest volume of sediment transport over a long period of record. It is typically a 1-3-year event.

BANKFULL DISCHARGE

The discharge that fills the width and depth of stable, alluvial streams. It fills the channel up to the first flat depositional surface (active floodplain) in the stream. Rosgen (1996) and Leopold (1994) say it is typically a 1.5-year event.

EFFECTIVE DISCHARGE

This discharge is similar to the dominant and bankfull discharges except that it can be determined from measured or calculated flow and sediment records.

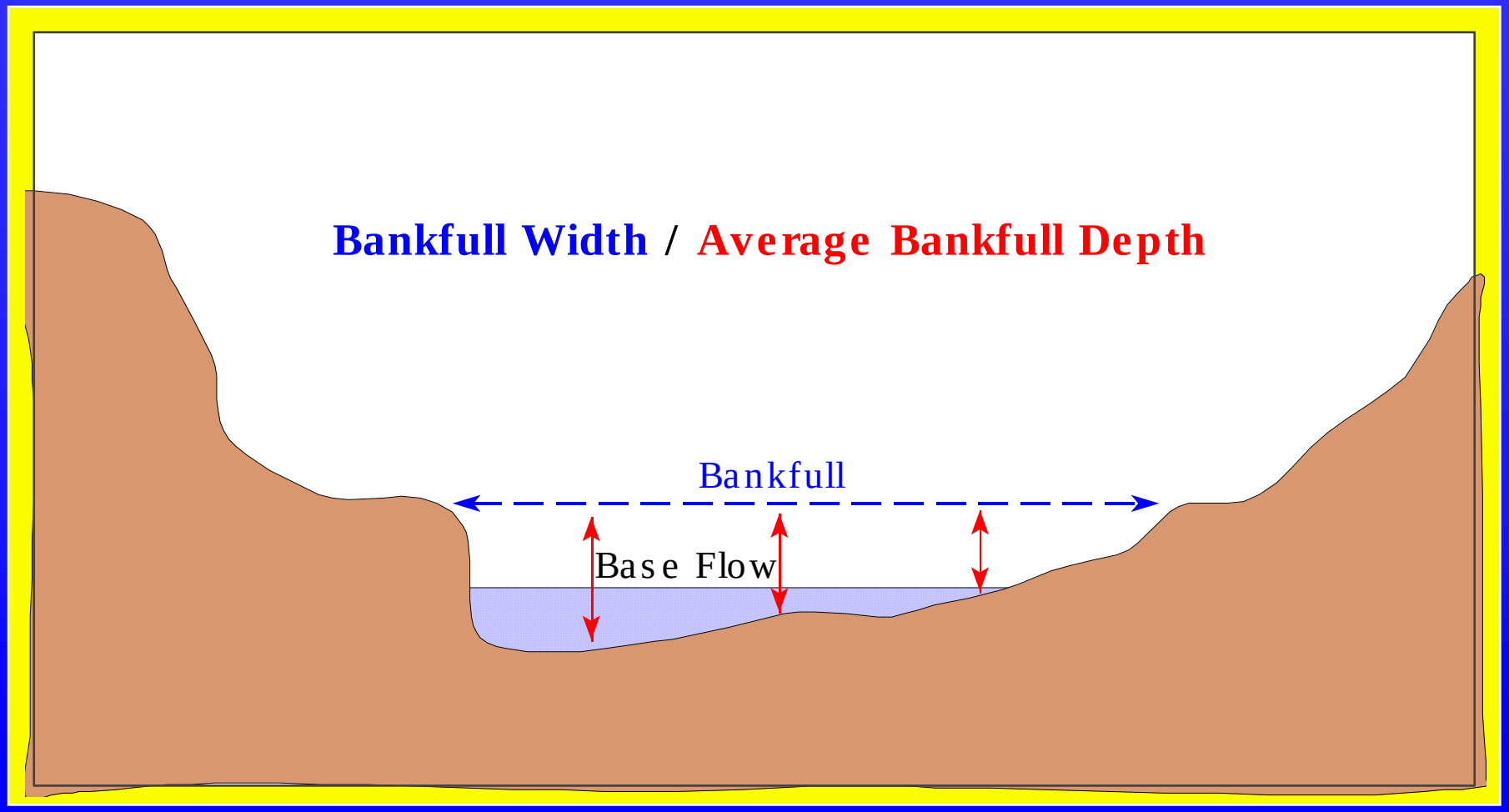
Bankfull Stage Indicators

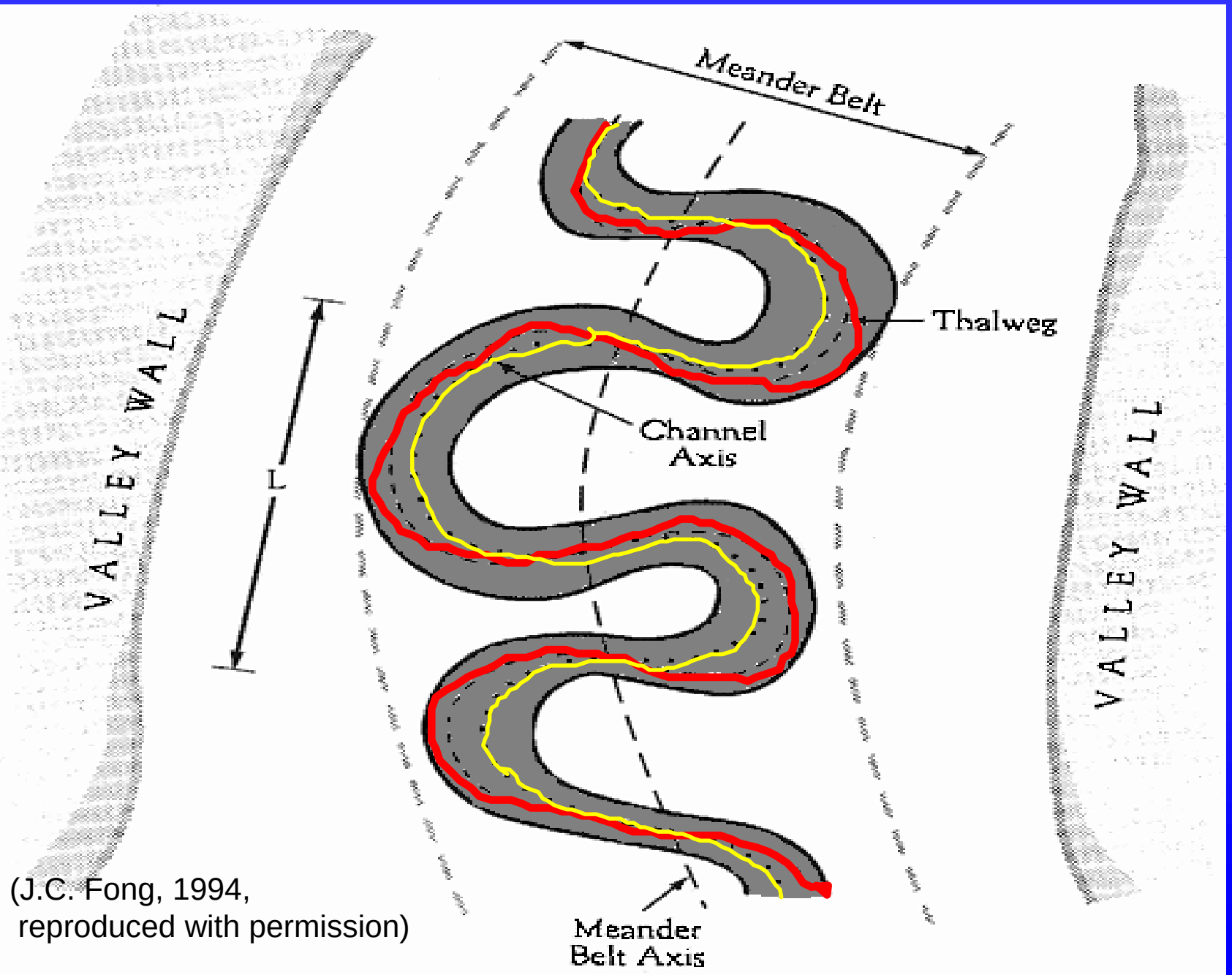
- **Deposition Features**
  - **Top of point bars**
- **Change in Vegetation**
  - **Especially lower limit of perennial species**
- **Change in particle size of bank material**
  - **Boundary between cobble/boulder and fine grained sand or silt**

Bankfull Stage Indicators

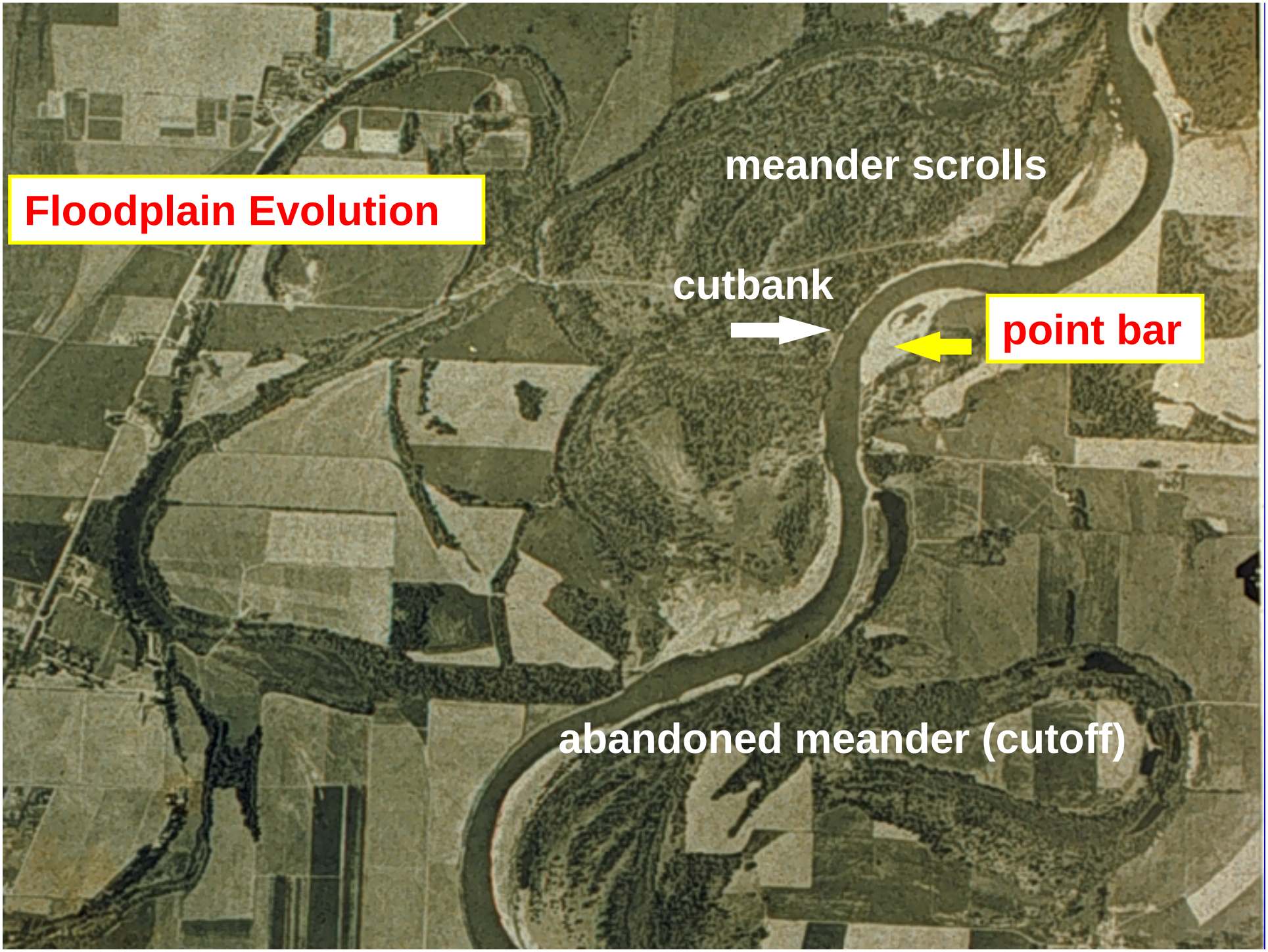
- **Undercut banks**
  - **Usually slightly below bankfull stage**
- **Stain lines or lower extent of lichens on boulders**

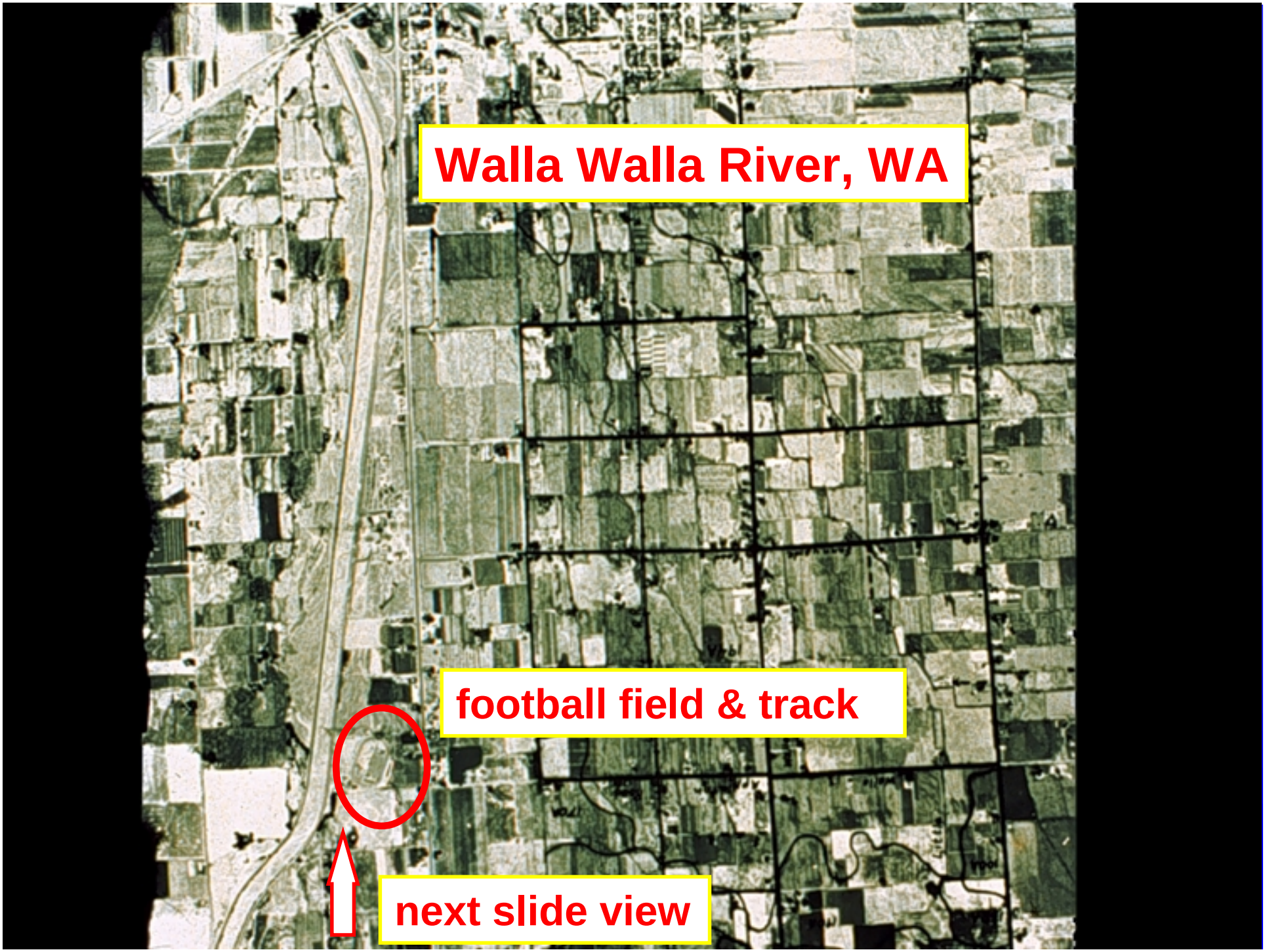
Width/Depth Ratio





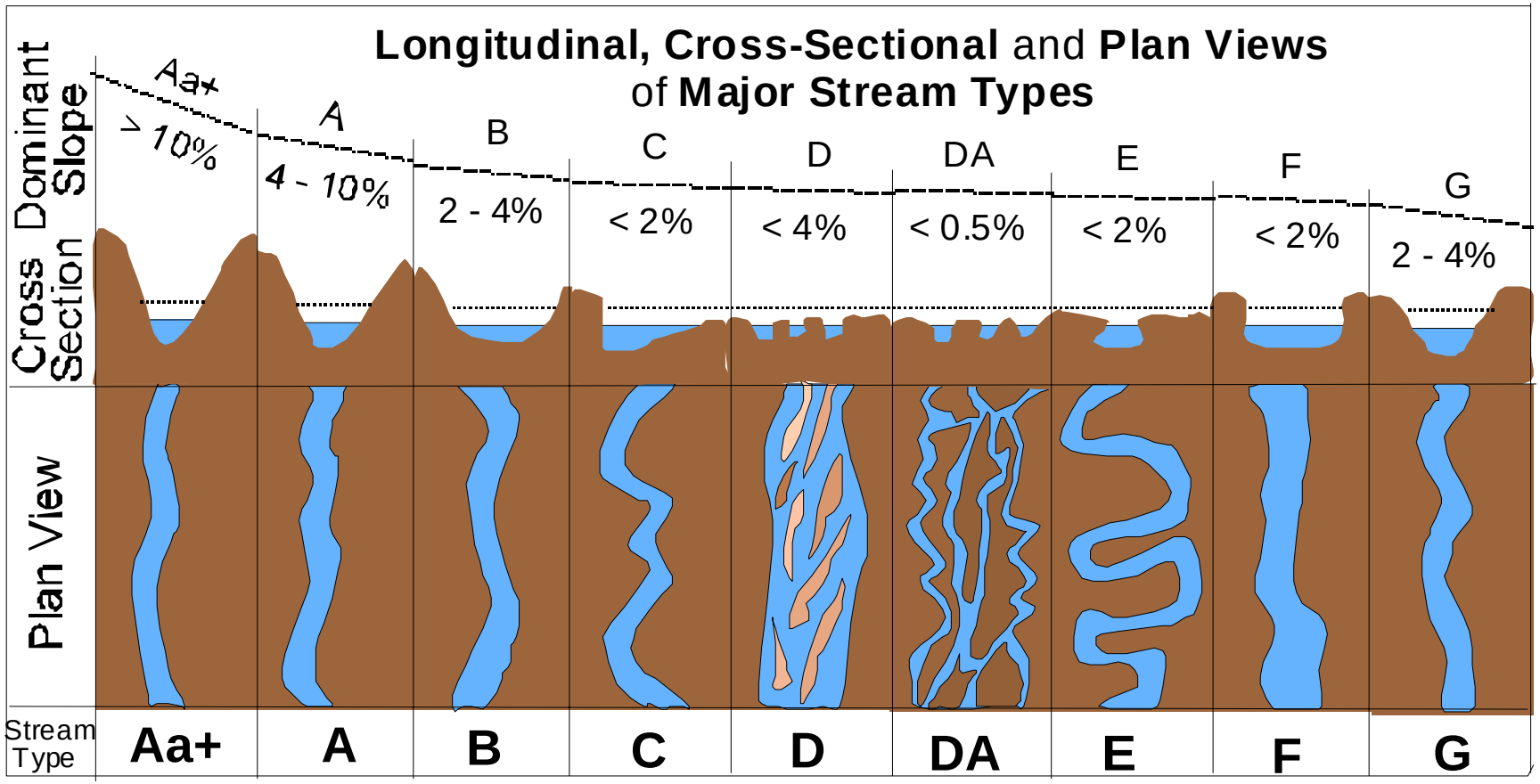
(J.C. Fong, 1994,
reproduced with permission)


Floodplain Evolution
meander scrolls
cutbank
point bar
abandoned meander (cutoff)


Walla Walla River, WA
football field & track
next slide view

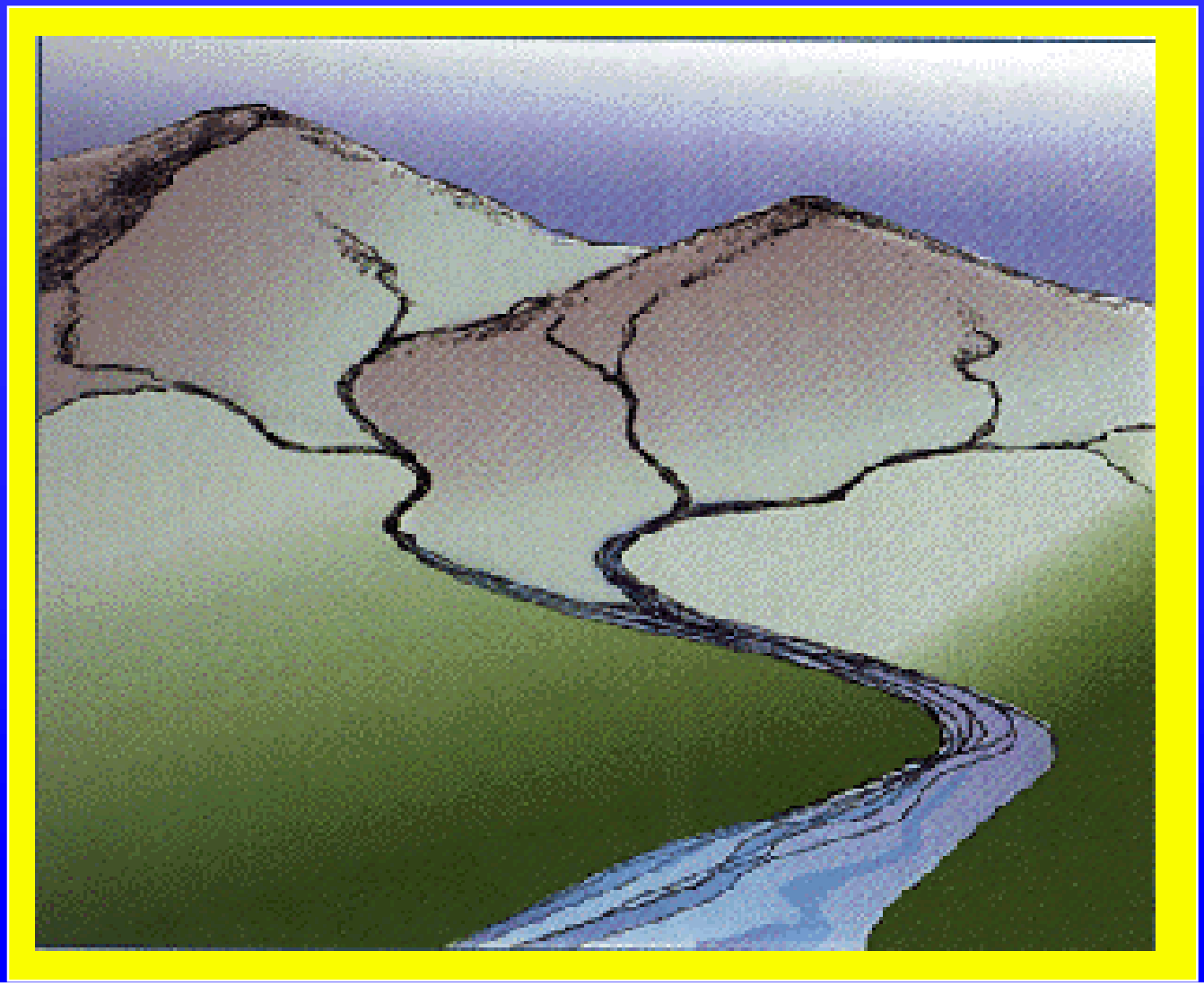

Walla Walla River, WA
football field & track

Rosgen Stream Types

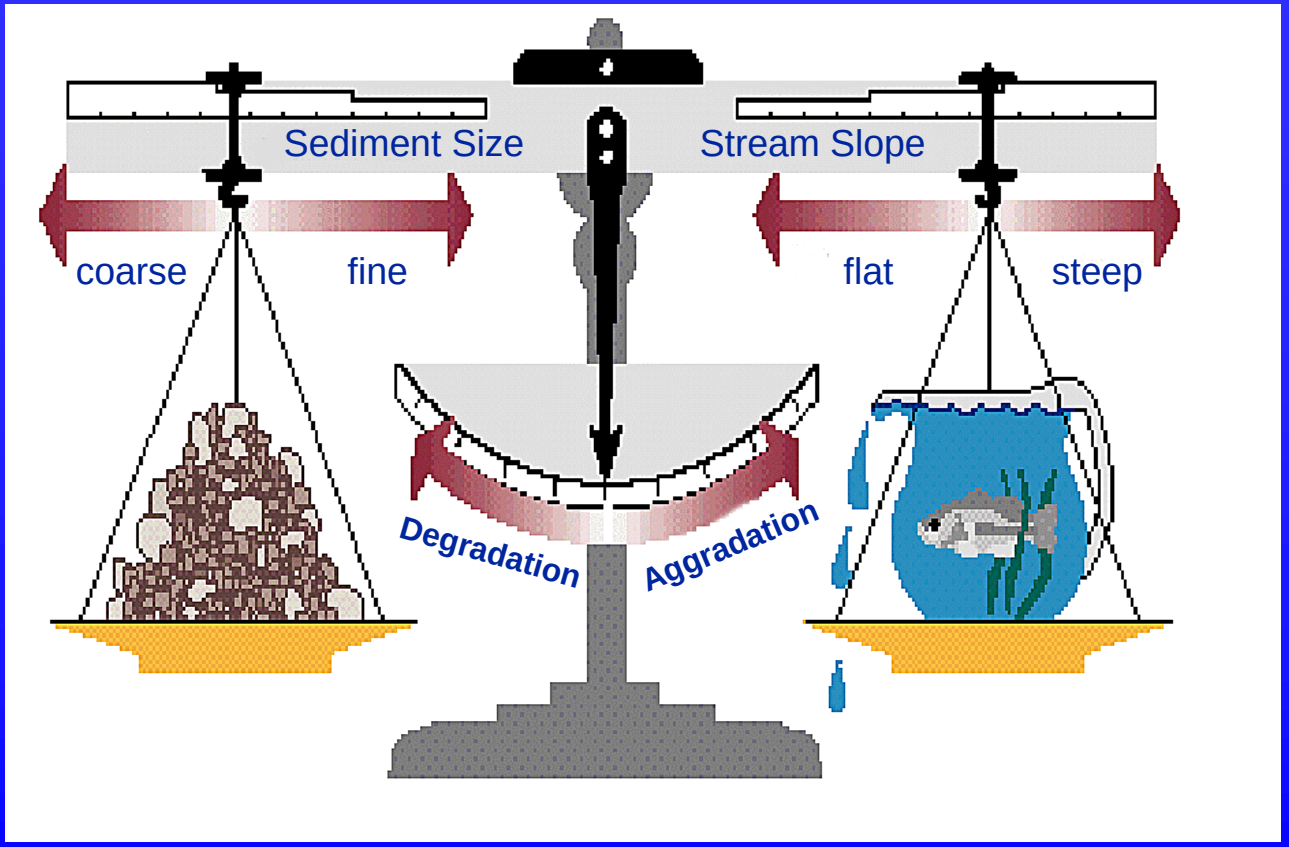


Rosgen, 1996

Stream Types across the Landscape



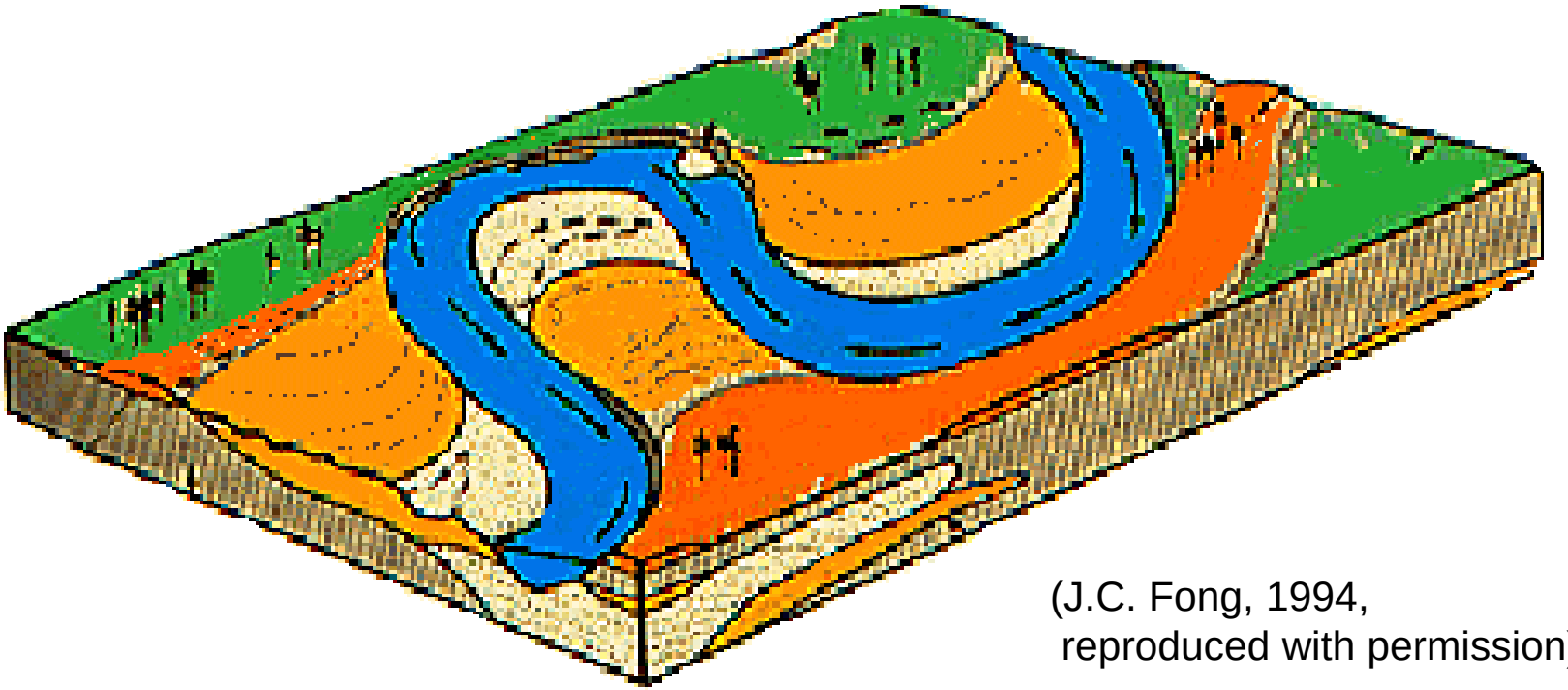
Stream Balance Equation (Lane, 1955):



$$Q_s * D_{50} = Q_w * S$$

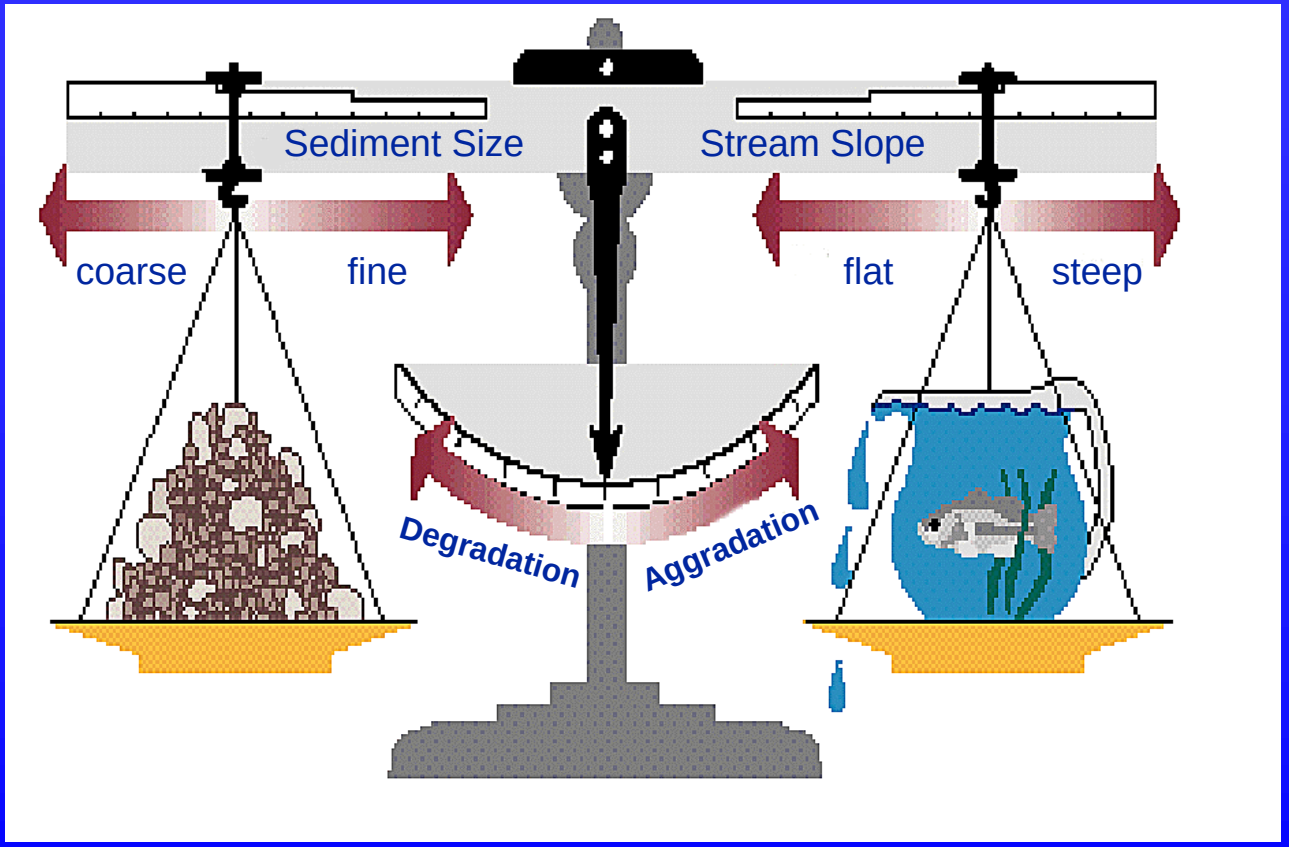
(NRCS, (1998)

Meandering Streams



(J.C. Fong, 1994,
reproduced with permission)

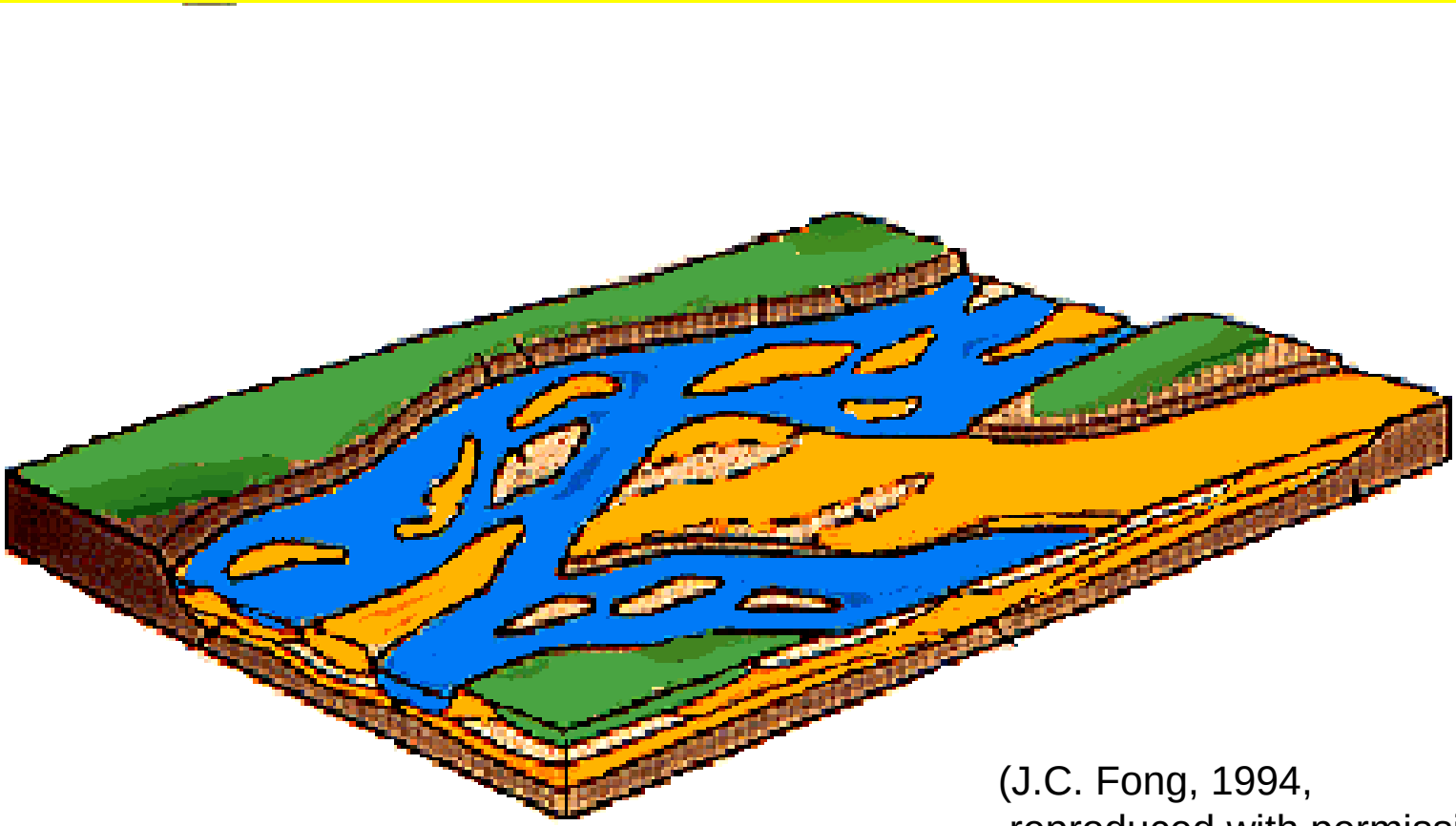
Stream Balance Equation (Lane, 1955):



$$Q_s * D_{50} = Q_w * S$$

(NRCS, (1998)

Braided Streams



(J.C. Fong, 1994,
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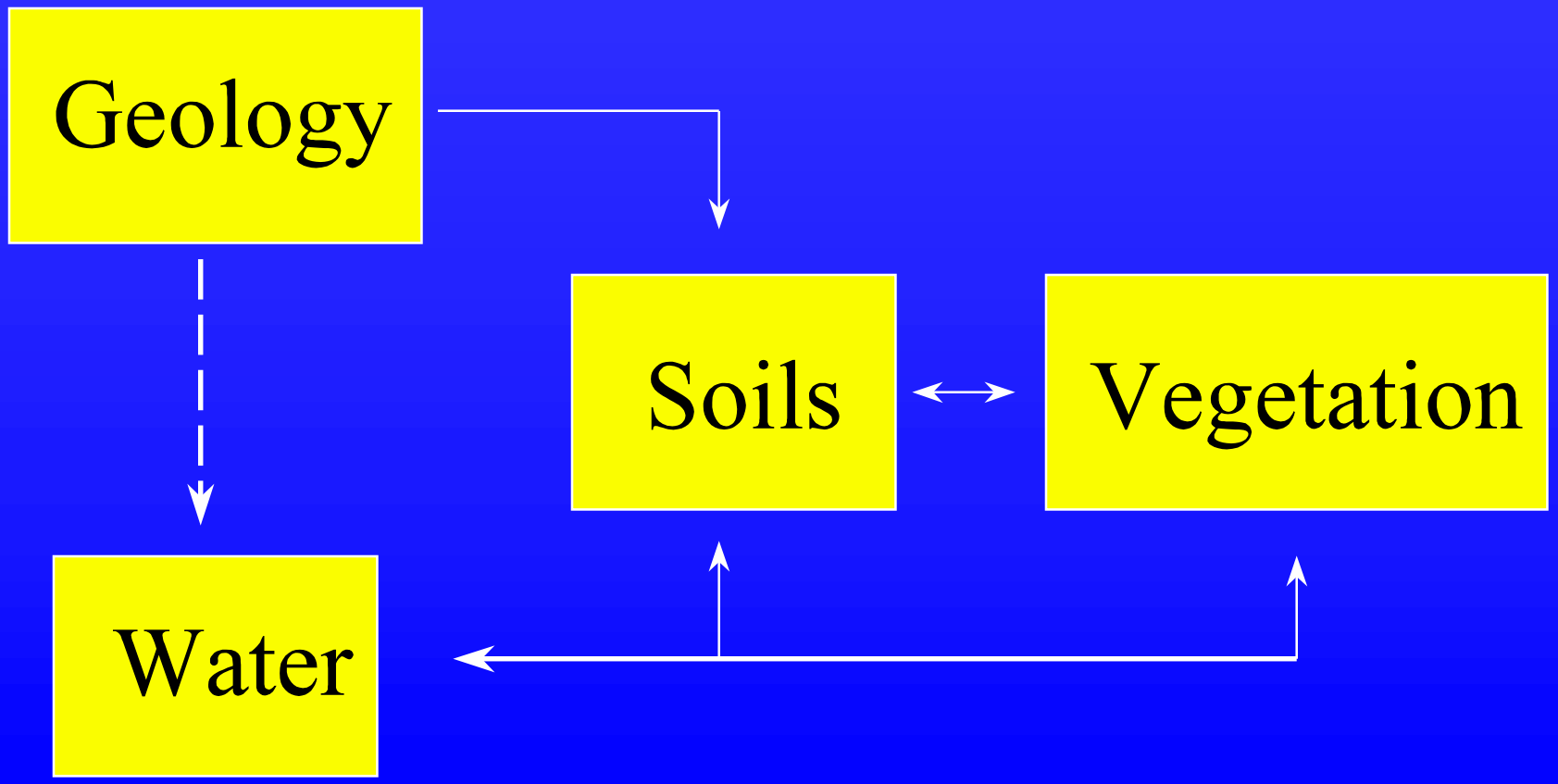
Watershed Controls on Stream Morphology



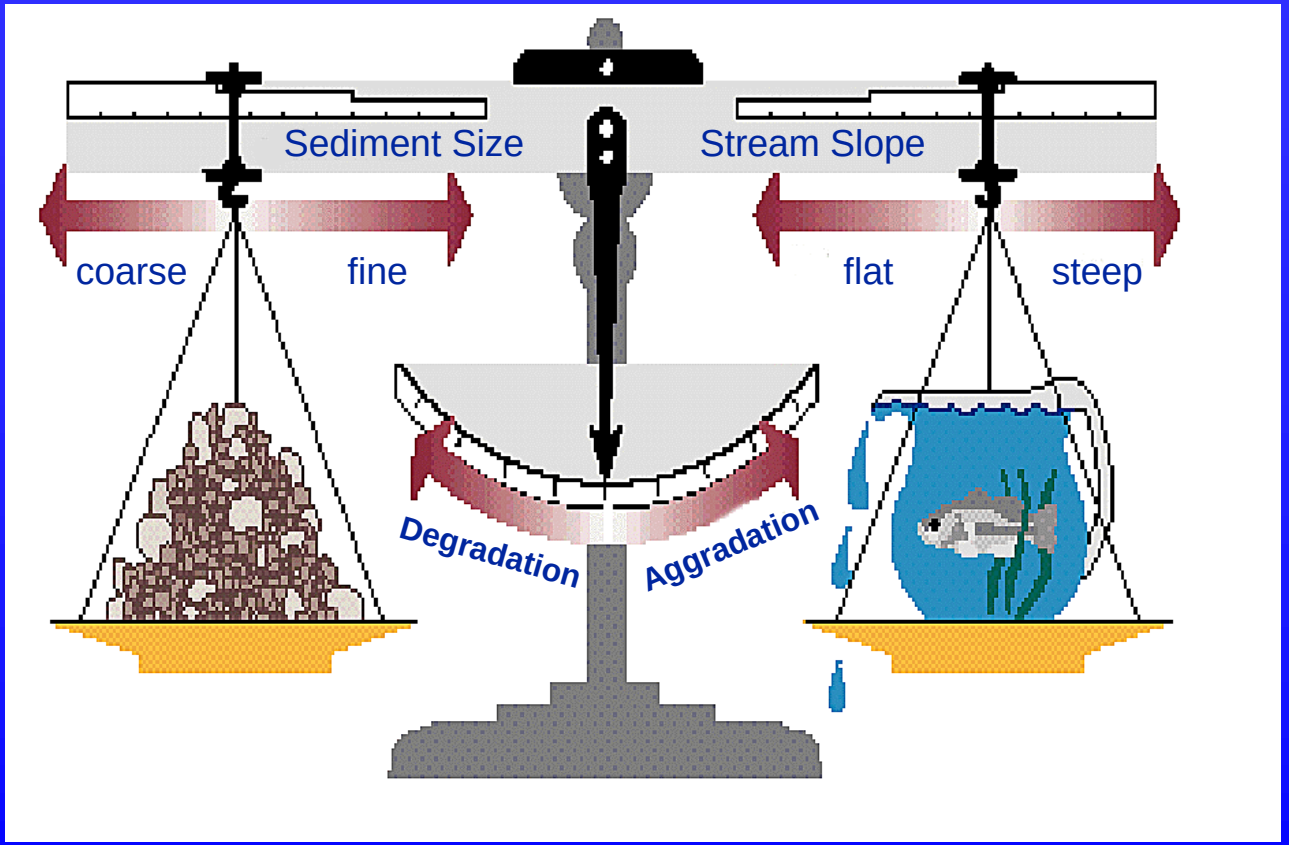
Fixed Watershed Variables

- Area
- Shape
- Orientation
- Slope
- Elevation
- Drainage Pattern

Management Influenced Watershed Variables

- Impervious Area
- Soils
- Drainage Density
- Vegetation
- Channel Features

Stream Balance Equation (Lane, 1955):



$$Q_s * D_{50} = Q_w * S$$

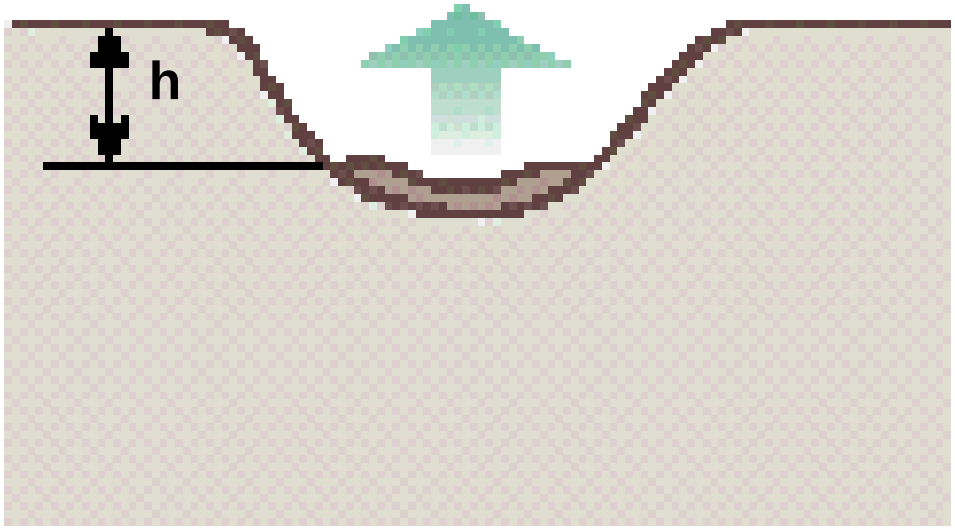
(NRCS, (1998)

Channel Evolution Model

- Pre-incision
- Incision
- Channel widening
- Dynamic stability

Channel Evolution Model

Class I - Stable

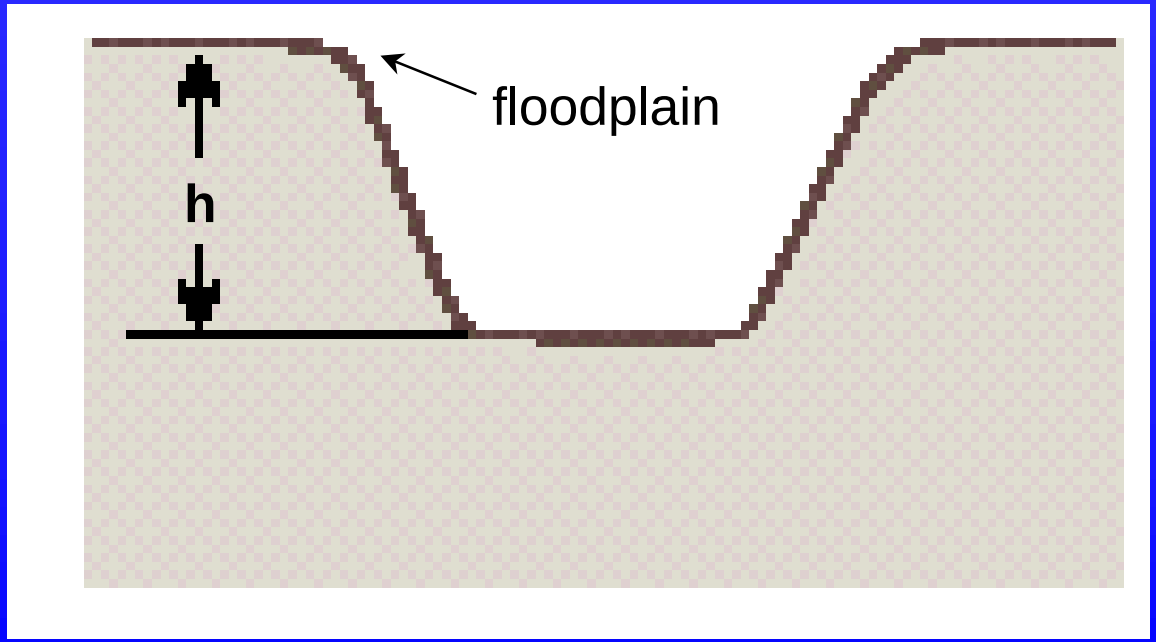


(from NRCS, 1998)

h < critical bank height

Channel Evolution Model

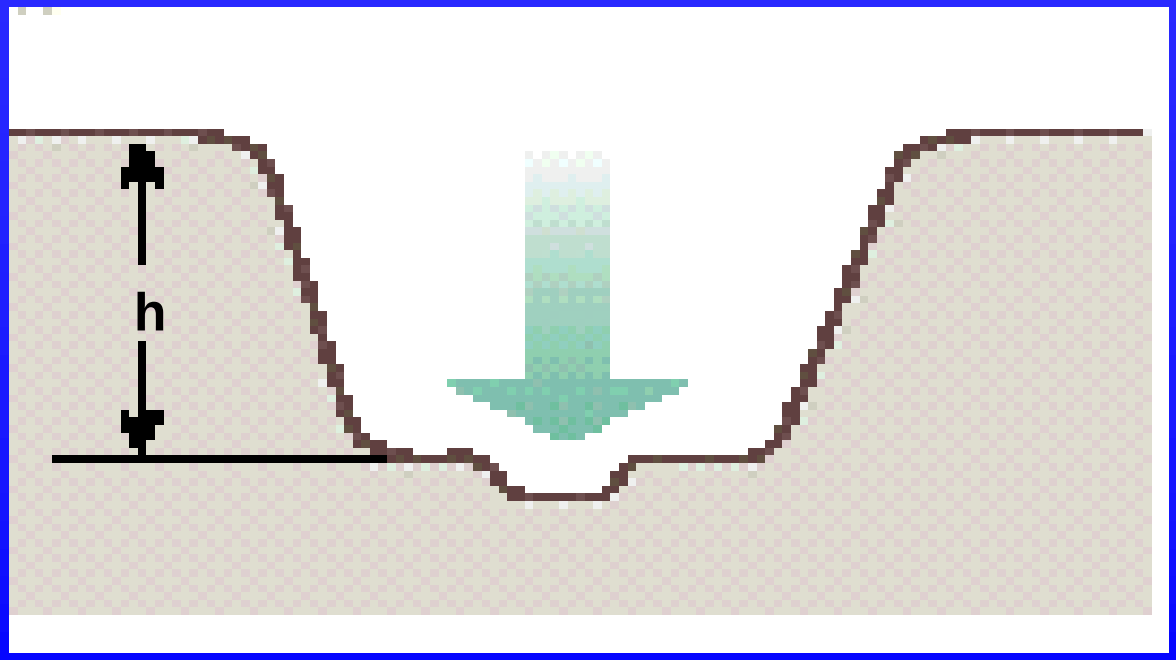
Class II - Channelized



h > critical bank height

Channel Evolution Model

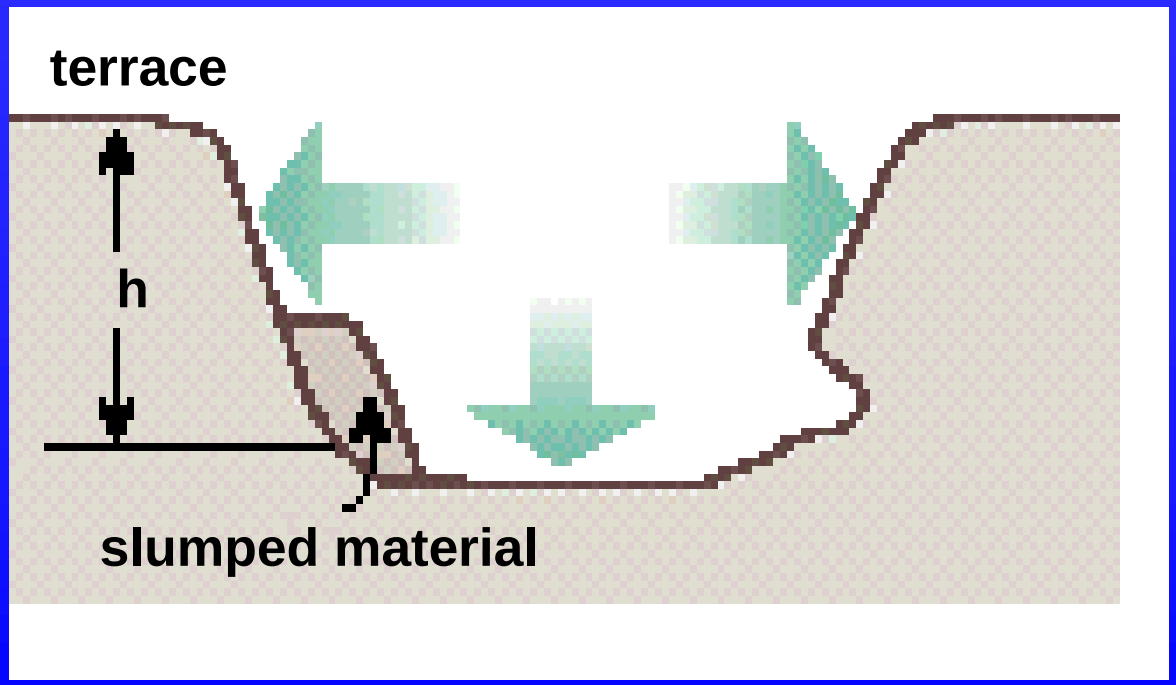
Class III - Degradation



h > critical bank height

Channel Evolution Model

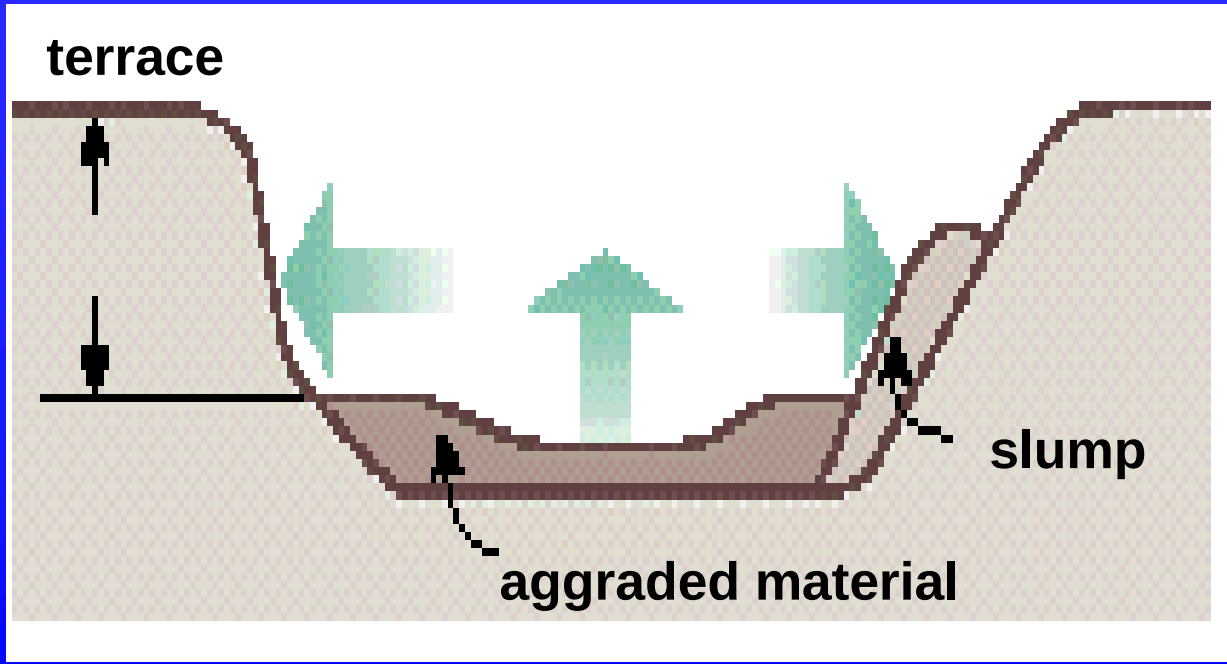
Class IV - Degradation & Widening



h > critical bank height

Channel Evolution Model

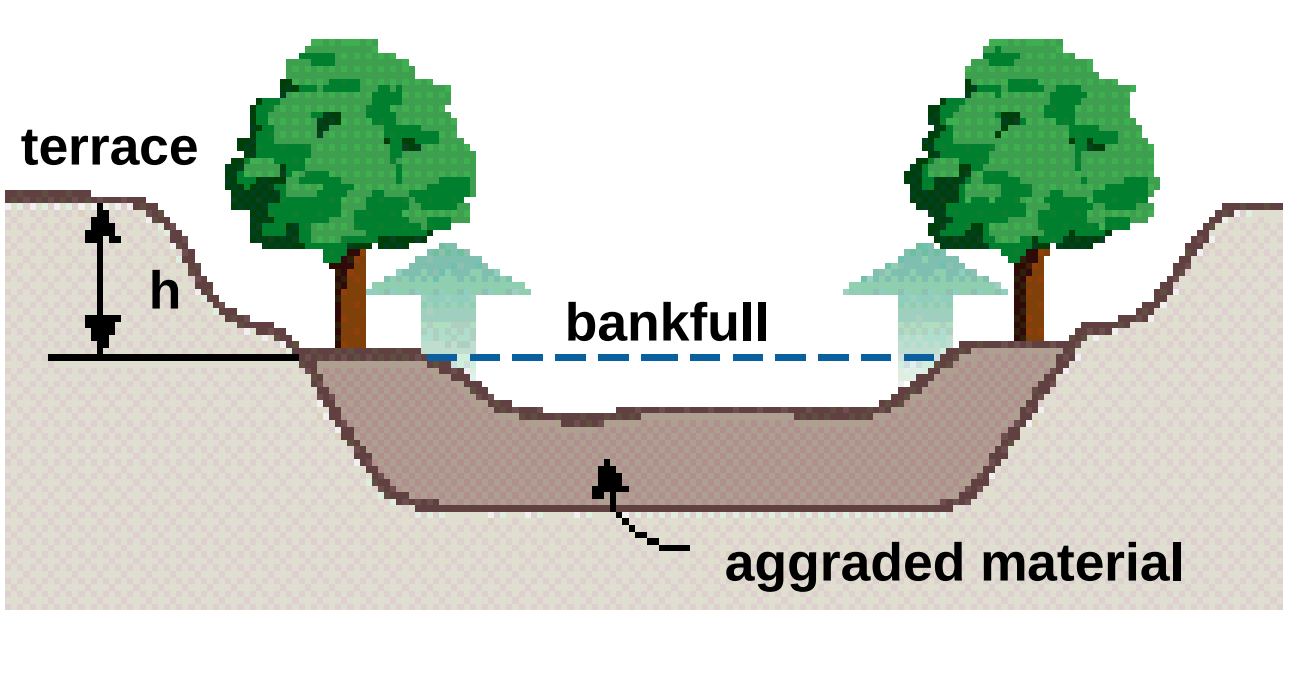
Class V - Aggradation & Widening



h > critical bank height

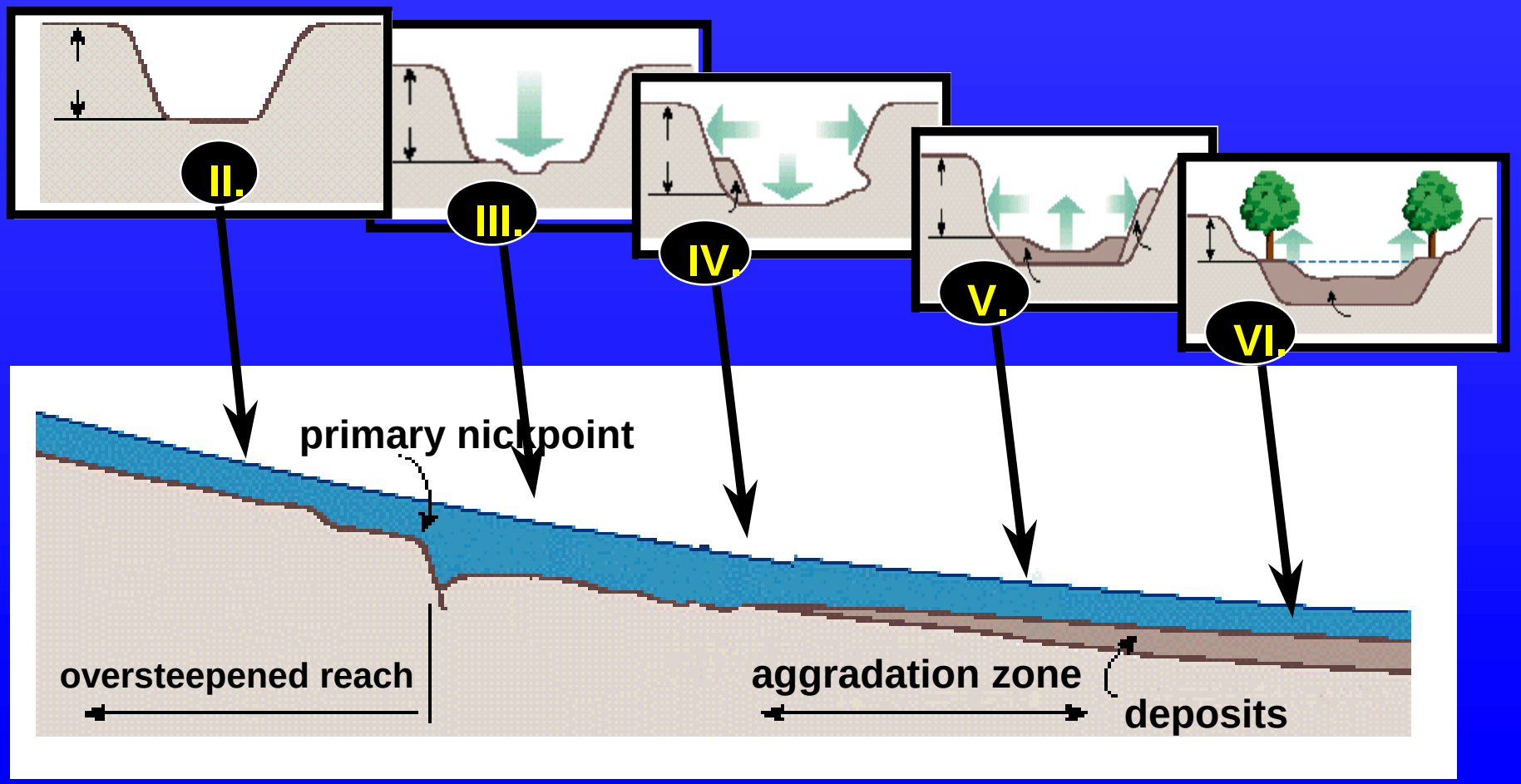
Channel Evolution Model

Class VI - Quasi Equilibrium



h < critical bank height

Channel Evolution Model (Space vs. Time)



(from NRCS, 1998)

UNSTABLE, INCISED STREAM INDICATORS

high steep banks

slumps

overhanging vegetation

cultural features exposed

no sediment deposits

knickpoints

PFC - California

Planning and Decisionmaking

Proper Functioning Condition -

Planning

&

Decisionmaking*

*Where are we now…
Where do we want to be?

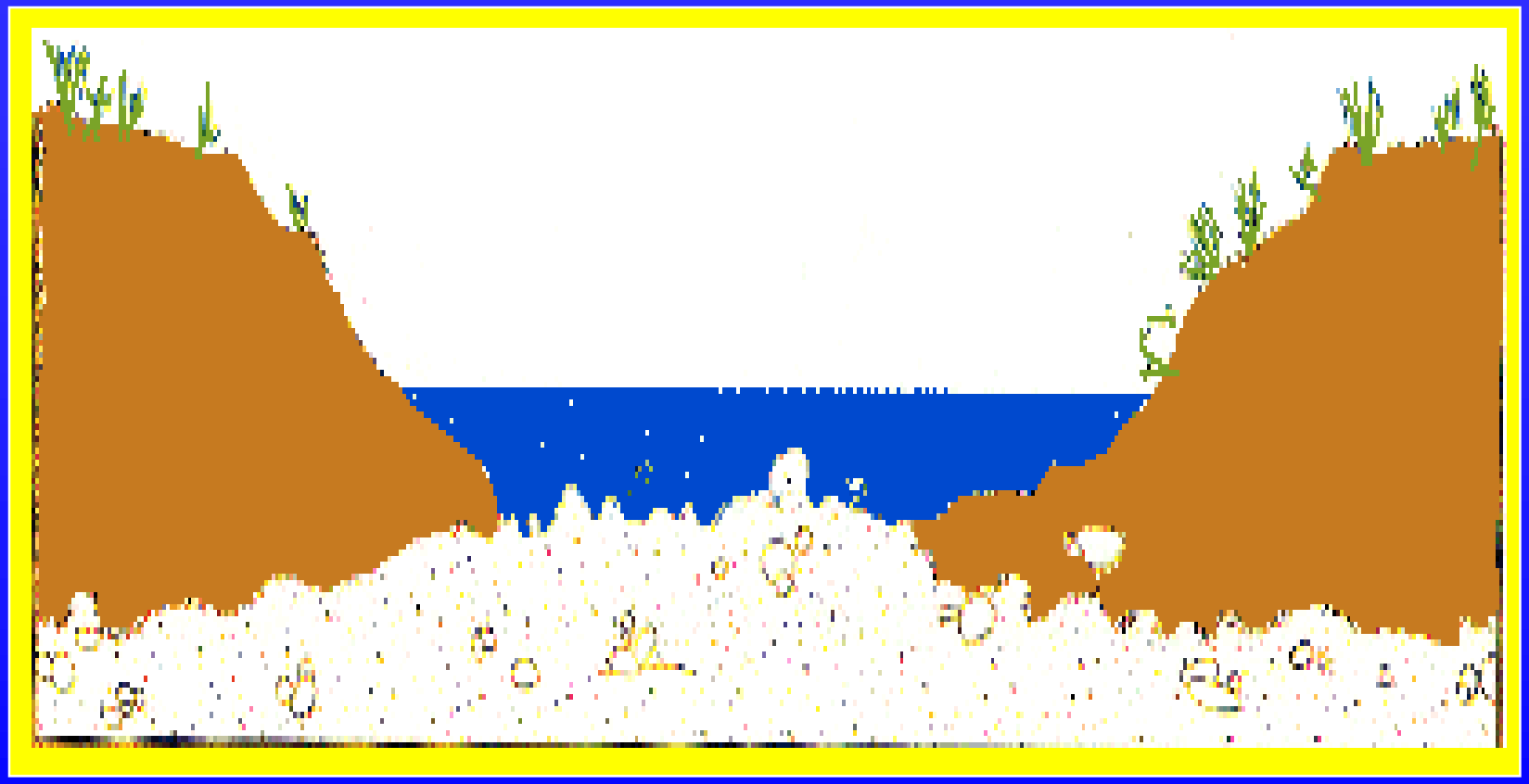
Determine Capability and Potential

- **Characterize Historic Condition**
  - Relic areas (e.g., preserves)
  - Historic photos, survey notes, and/or other documents
  - Species lists (plant and animal)
  - Species habitat needs
  - Soils indicators of preexisting hydrologic & ecological conditions
  - Geomorphic indicators of preexisting landform & hydrologic conditions
  - Watershed natural and land-use history

Determination of Capability and Potential, cont'd

- **Evaluate Present Condition in Context of Historic Condition**
  - Watershed Condition
  - Hydrology (frequency and duration of flooding, etc)
  - Species lists (plant and animal)
  - Species habitat needs
  - Limiting Factors - natural and human
- **Determine Capability and Potential of Site**

Vegetation Community Succession

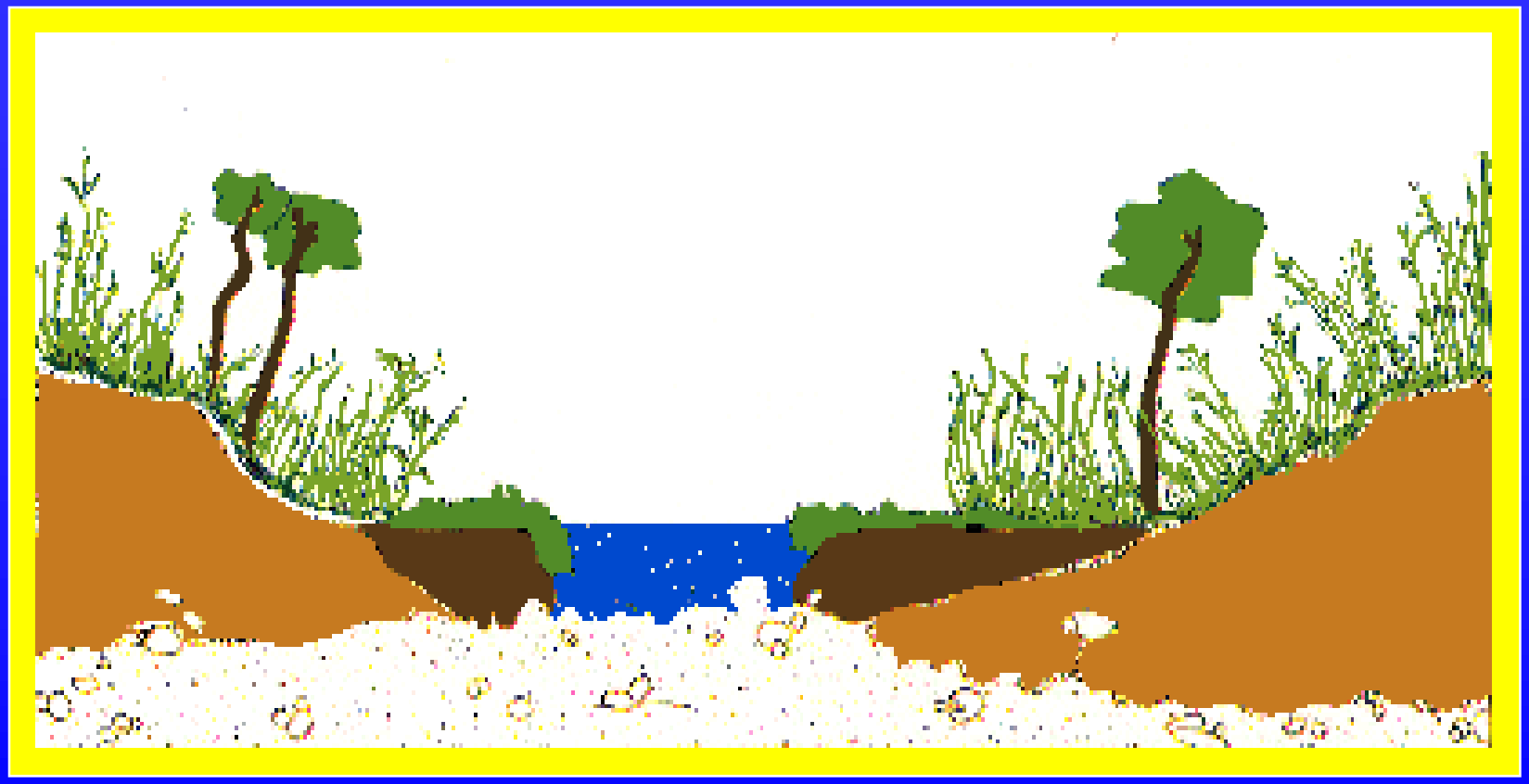


Bare Ground

Vegetation Community Succession

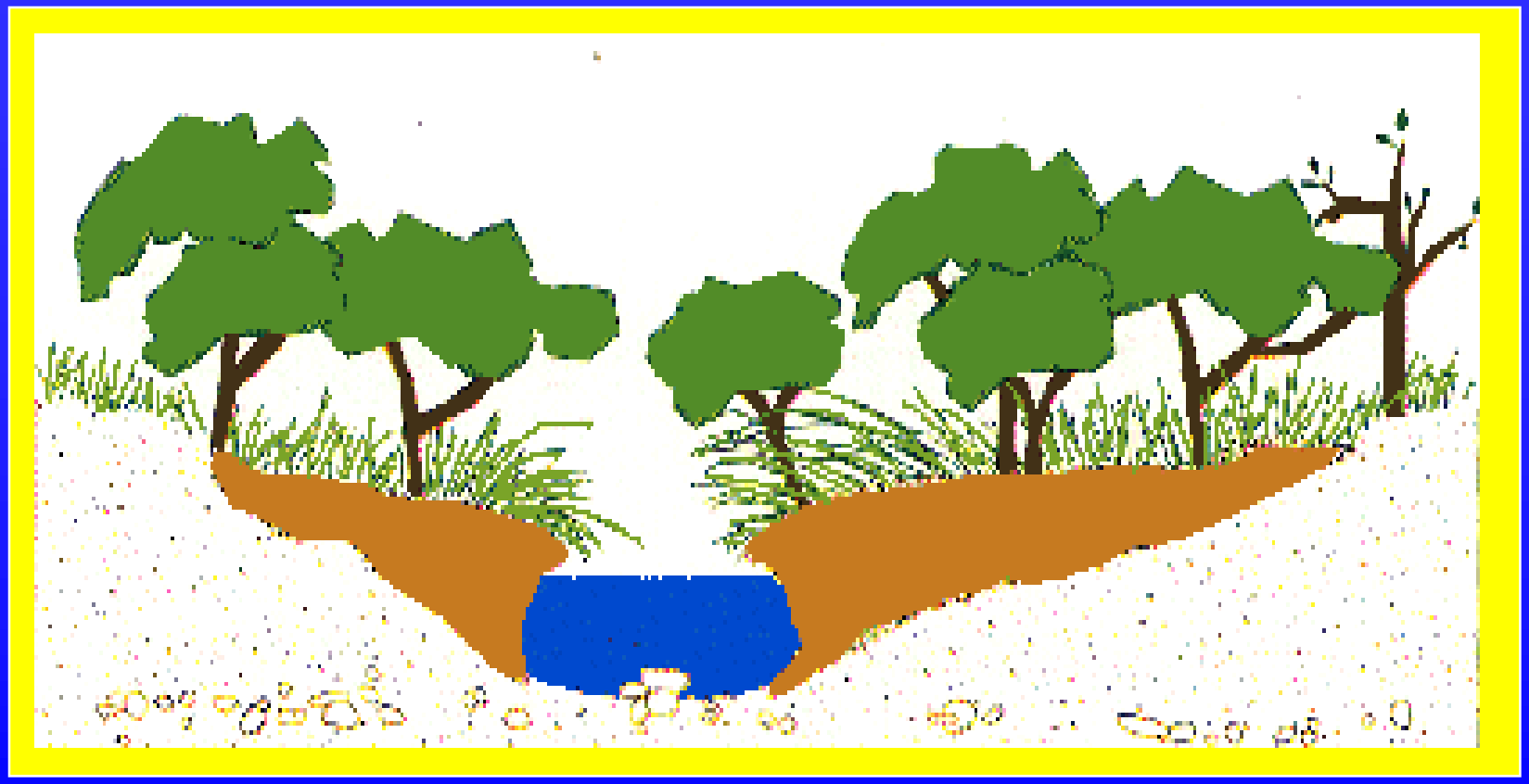
Early Seral

Vegetation Community Succession



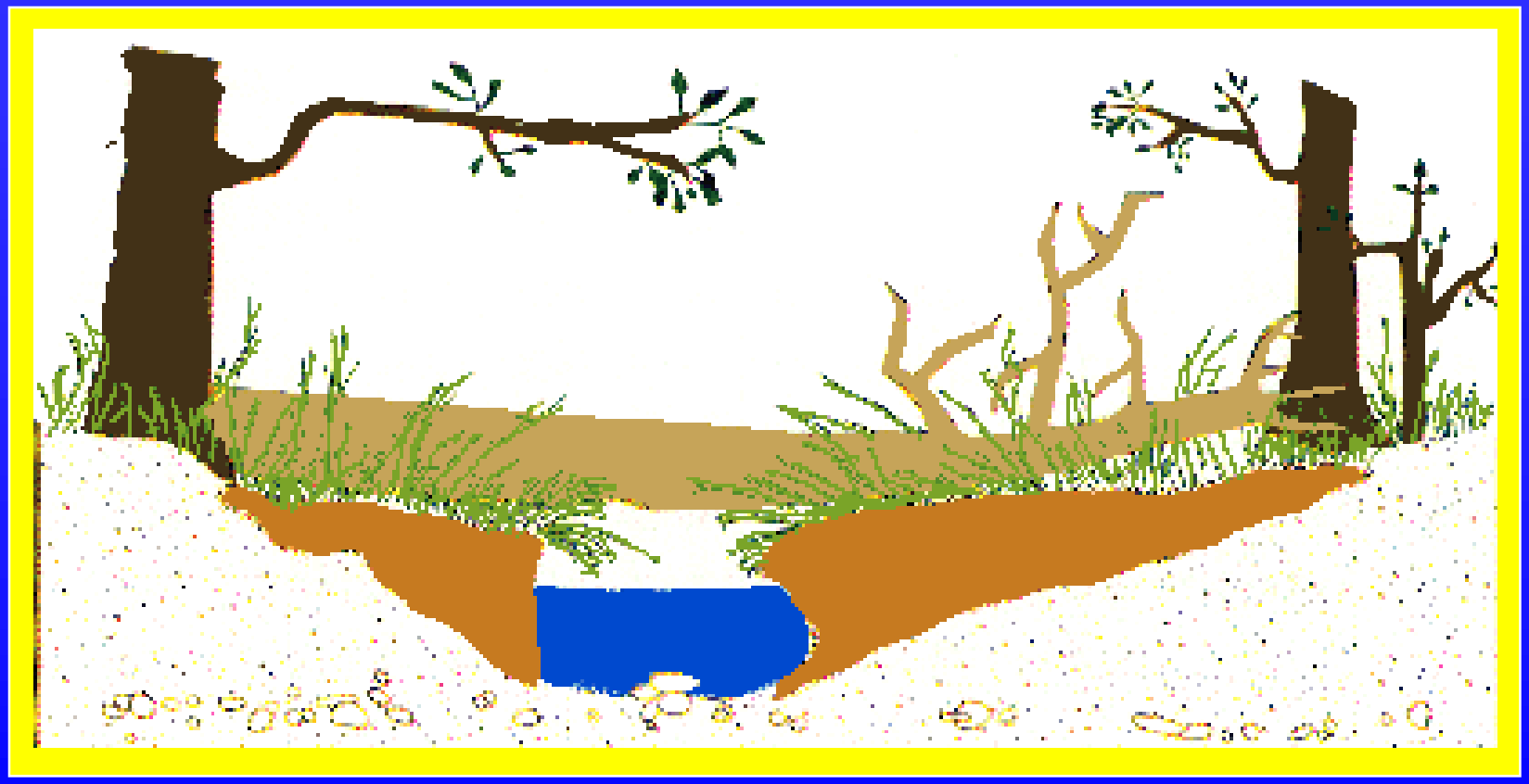
Mid-Seral

Vegetation Community Succession

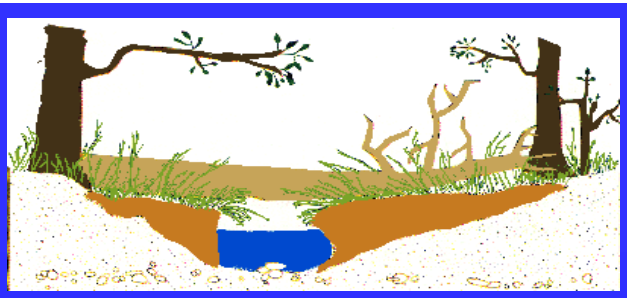


Late Seral

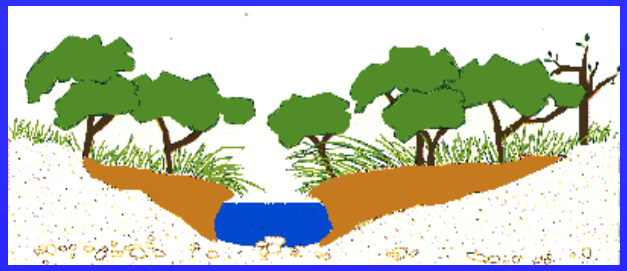
Vegetation Community Succession



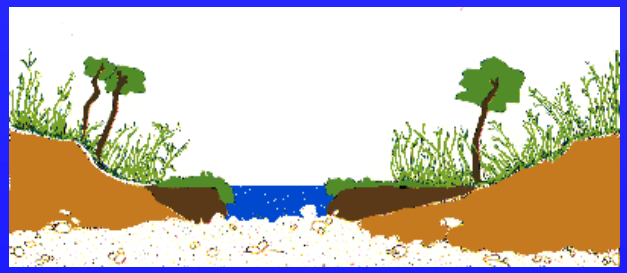
Potential Natural Community (PNC)



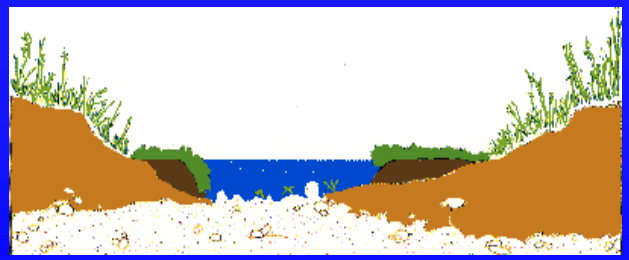
PNC



Late



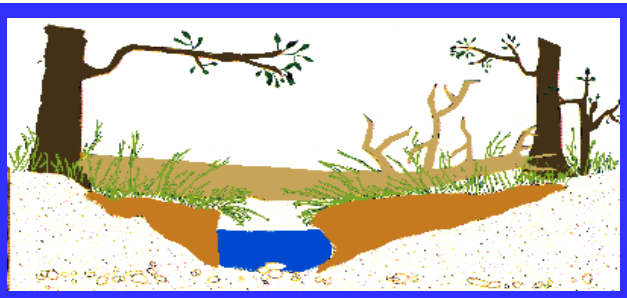
Mid



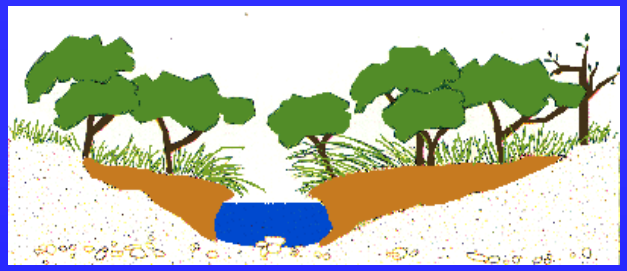
Early

Bare

PFC

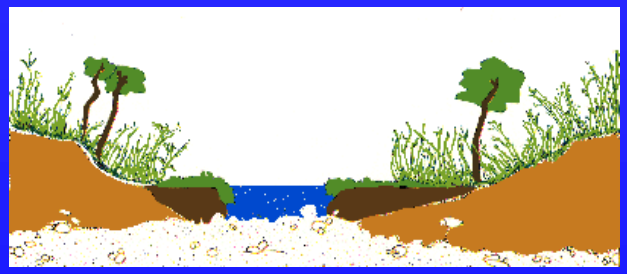


PNC



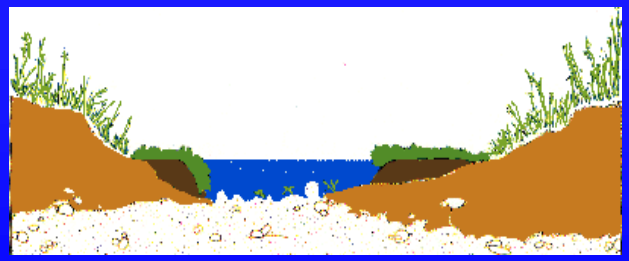
Late

Decision Space - VALUES



Mid

PFC



Early

Functioning-At Risk

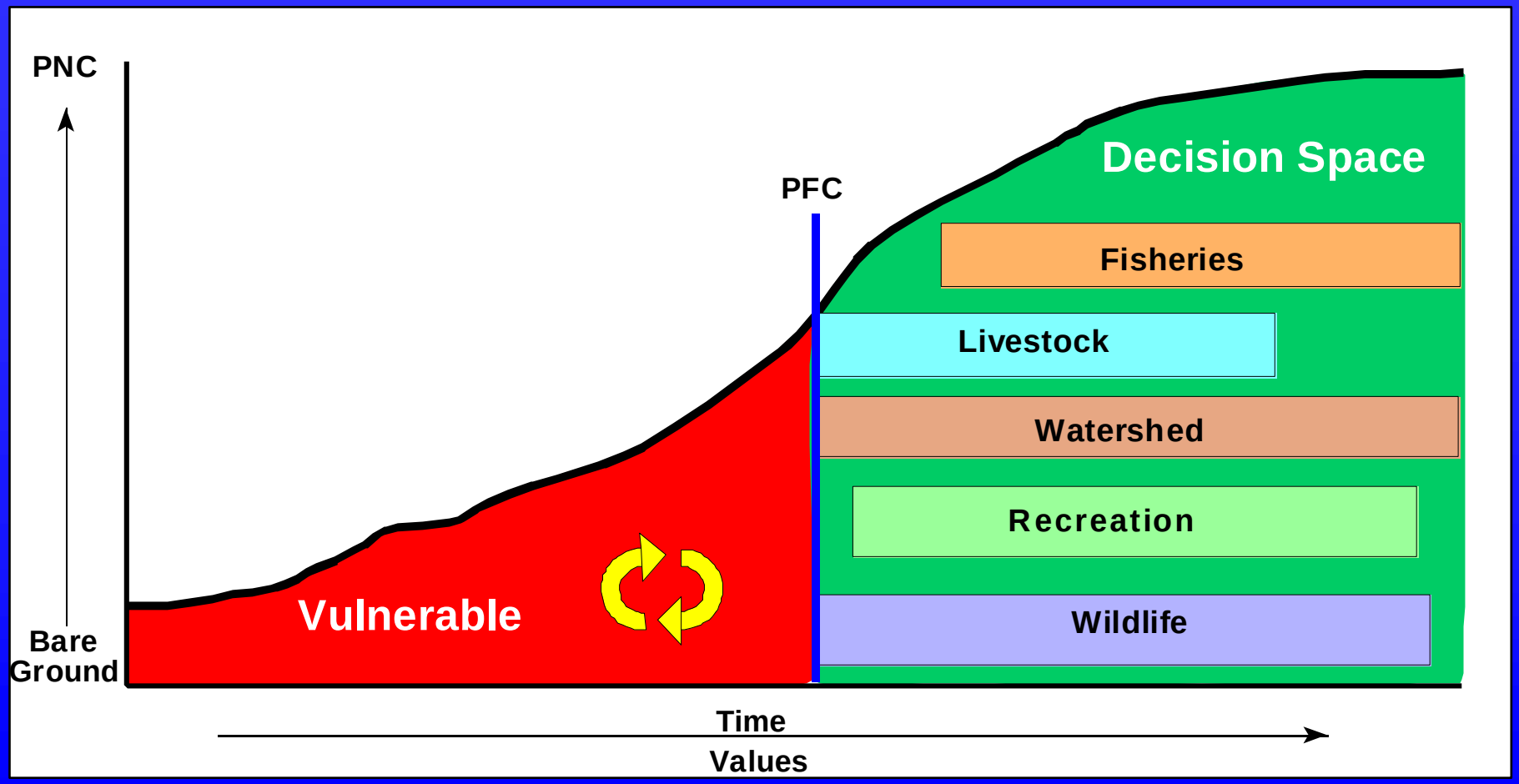
Bare

Nonfunctioning

Desired Plant Community Reflects Values & Priorities

- **Watershed**
- **Forage**
- **Basketweaving**
- **Recreation**
- **Wildlife**
- **Fisheries**

Riparian Vegetation Recovery



Planning Process

Riparian Proper Functioning Condition Assessment

Step 1 **Existing Condition** - Determine the existing riparian-wetland and watershed condition utilizing appropriate inventories

Step 2 **Potential Condition** - Determine PNC by using relic areas, historic photos, reference areas, etc.

Step 3 **PFC** - Determine the minimum conditions required for the system to function properly

Step 4 **Resource Values** - Determine existing and potential resource values and the plant communities necessary to support them

Planning Process

Riparian Proper Functioning Condition Assessment

Step 5 **Management Goals** - Determine specific objectives necessary to reach the management goal for the watershed, DPC, or DFC

Step 6 **Planned Action** - Design management actions to achieve the DPC or DFC

Step 7 **Monitoring** - Design appropriate monitoring strategies to assess progress towards meeting the management goals and objectives

Step 8 **Flexibility or Adaptive Management** - Management should remain flexible to accommodate change based upon monitoring results

PFC - California

Lotic and Lentic Checklist

PFC Assessment

General Instructions

- An Interdisciplinary Team (ID) will be used.
- Delineate the stream reach to be inventoried
- Determine the potential/capability of the site
- Use checklist to determine Proper Functioning Condition for riparian-wetland areas
  - Evaluate each item and record the finding on the checklist
  - Elements are numbered for reference only and do NOT constitute a priority or importance
  - Document rationale in space provided

PFC Assessment

General Instructions

- Determine the Functional Rating:
  - Functioning Properly
  - Functioning At--Risk
    - Upward Trend
    - Downward Trend
  - Nonfunctioning
- Complete the checklist summary.
- Establish photo points where possible

Lotic Checklist

Hydrologic Factors

Lotic Checklist - Hydrologic Factors

Yes	No	NA

1) Floodplain above bankfull is inundated in "relatively frequent" events

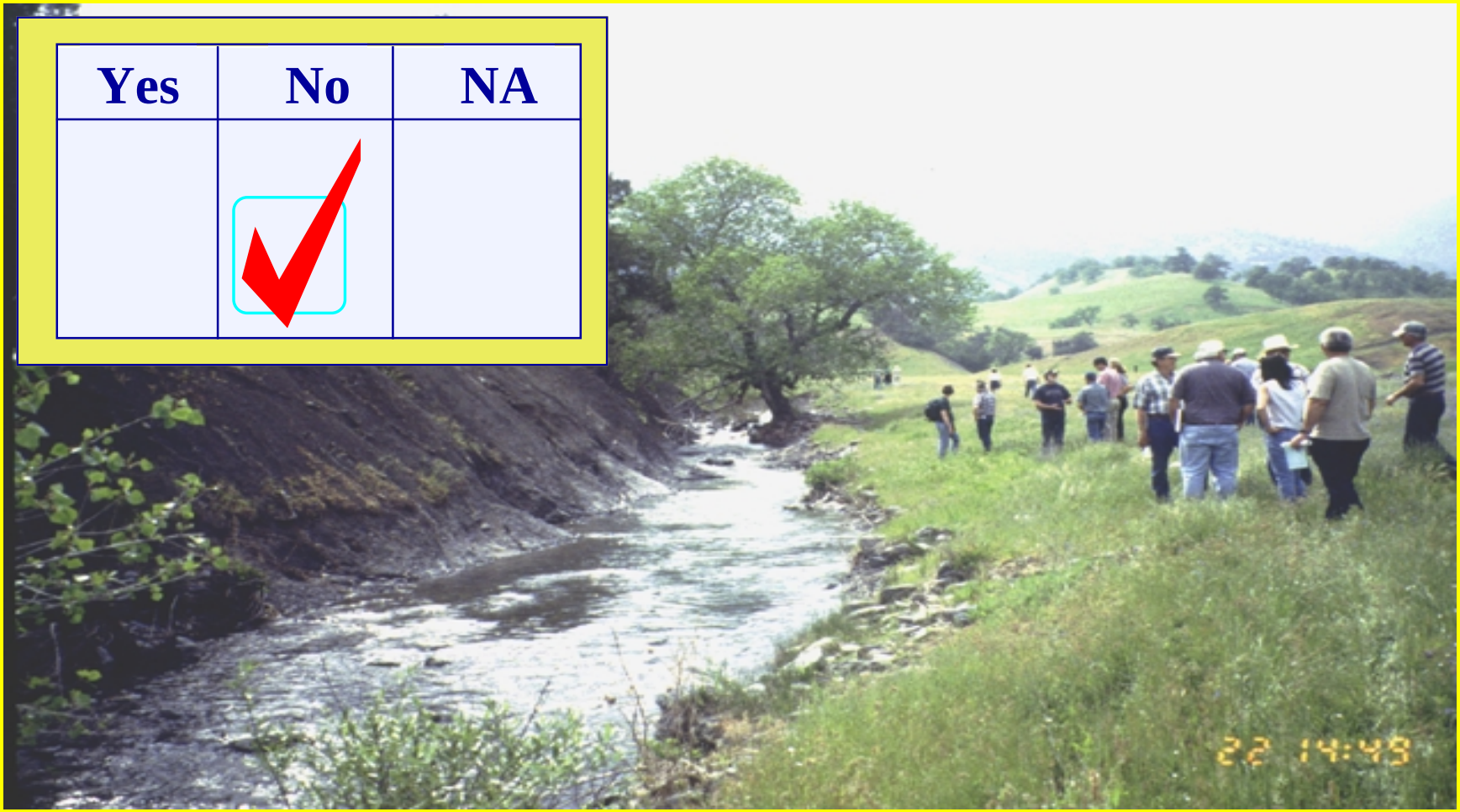
1) Floodplain above bankfull is inundated in “relatively frequent” events

Yes	No	NA
✓		

Scott River Watershed, Siskiyou Co.(4/96)

1) Floodplain above bankfull is inundated in “relatively frequent” events

Yes	No	NA
	✓	



Clover Creek Watershed, Glenn Co.(1998)

Lotic Checklist - Hydrologic Factors

Yes	No	NA

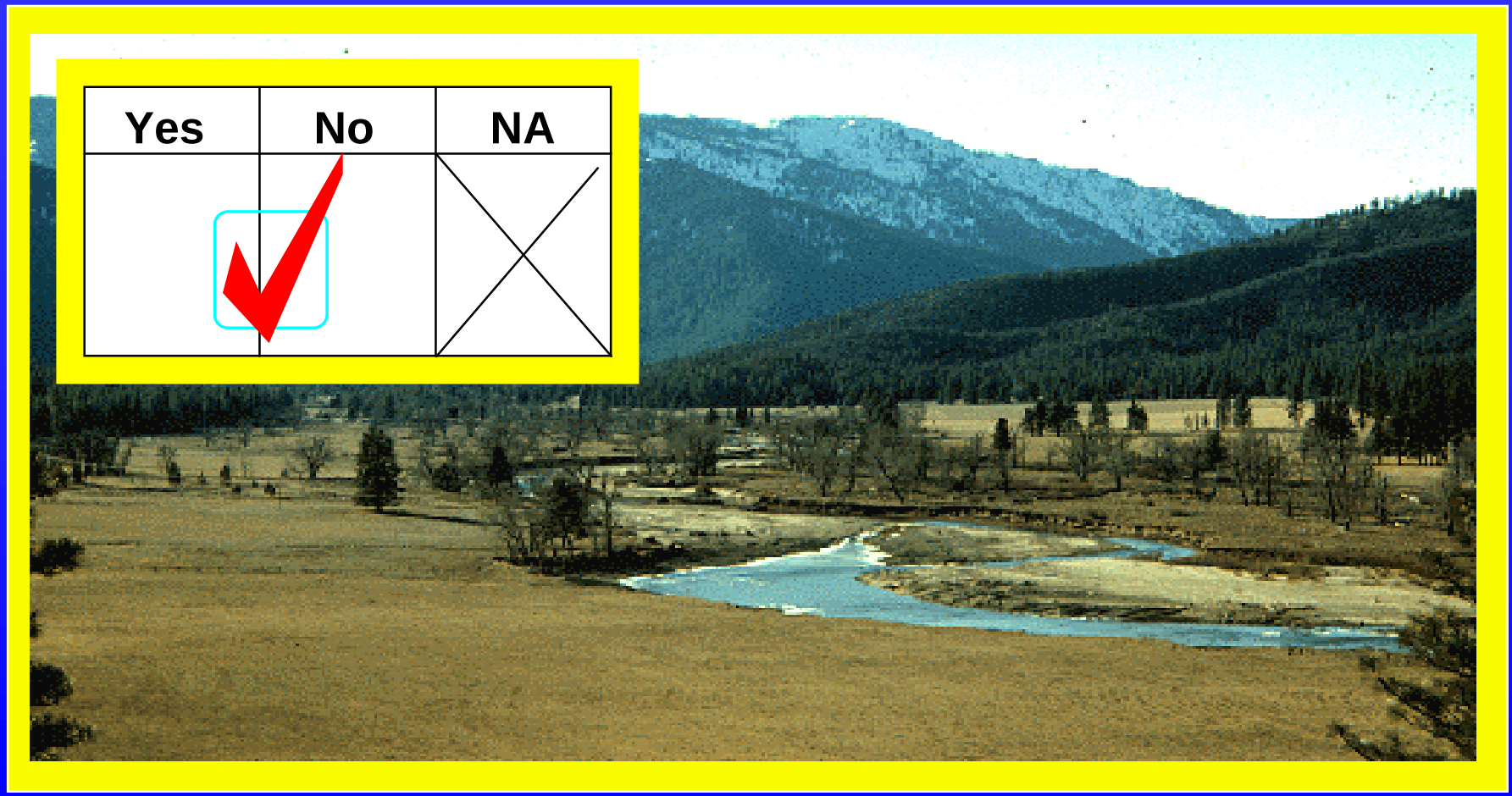
2) Where beaver dams are present they are active and stable

Lotic Checklist -
Hydrologic Factors

Yes	No	NA
		X

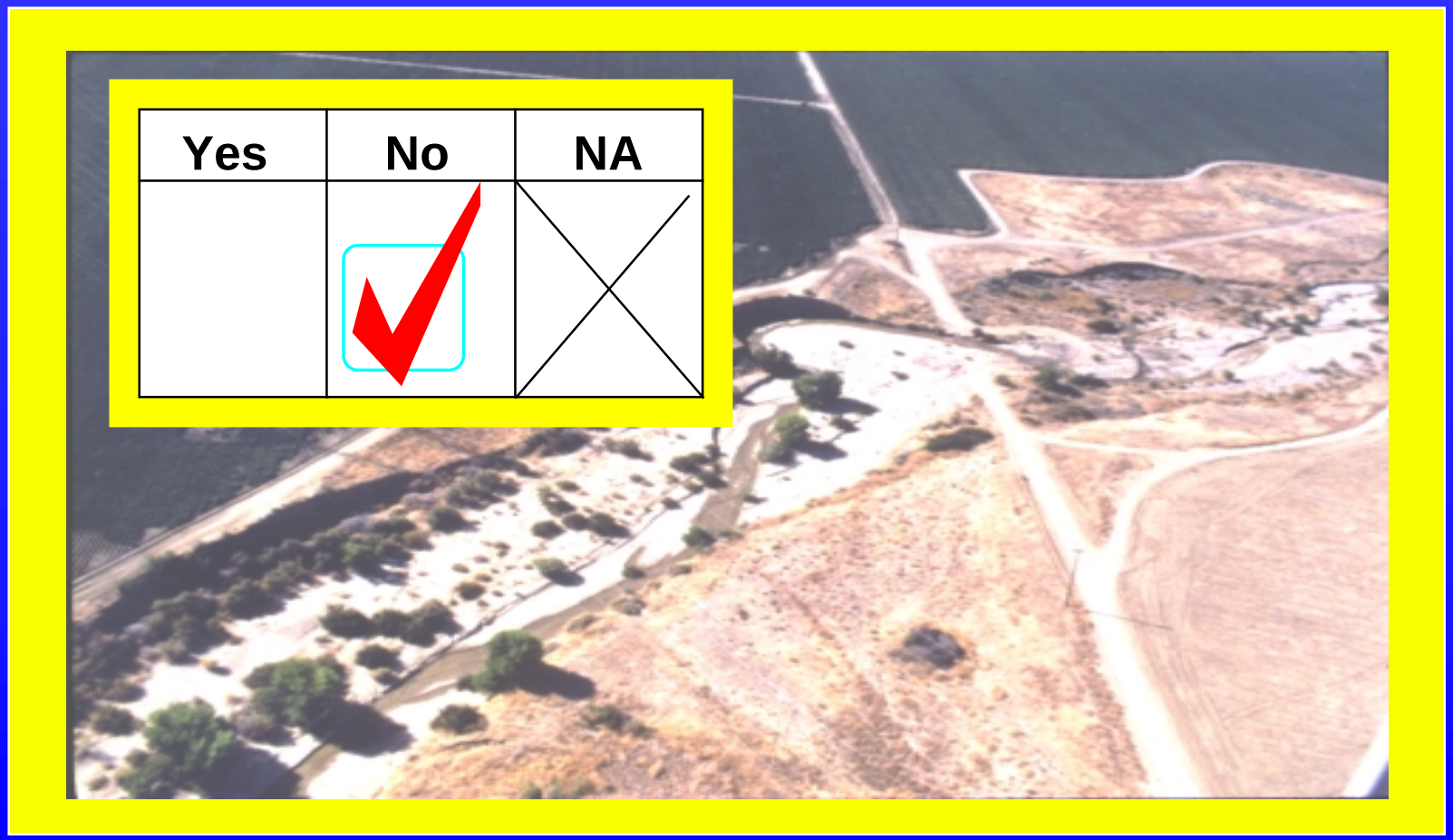
3) Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e. landform, geology, and bioclimatic region).

3) Sinuosity, width/depth ratio, and gradient are in balance with landscape setting



Indian Creek, Plumas Co

3) Sinuosity, width/depth ratio, and gradient are in balance with landscape setting



Panoche Creek, Fresno Co.(1993)

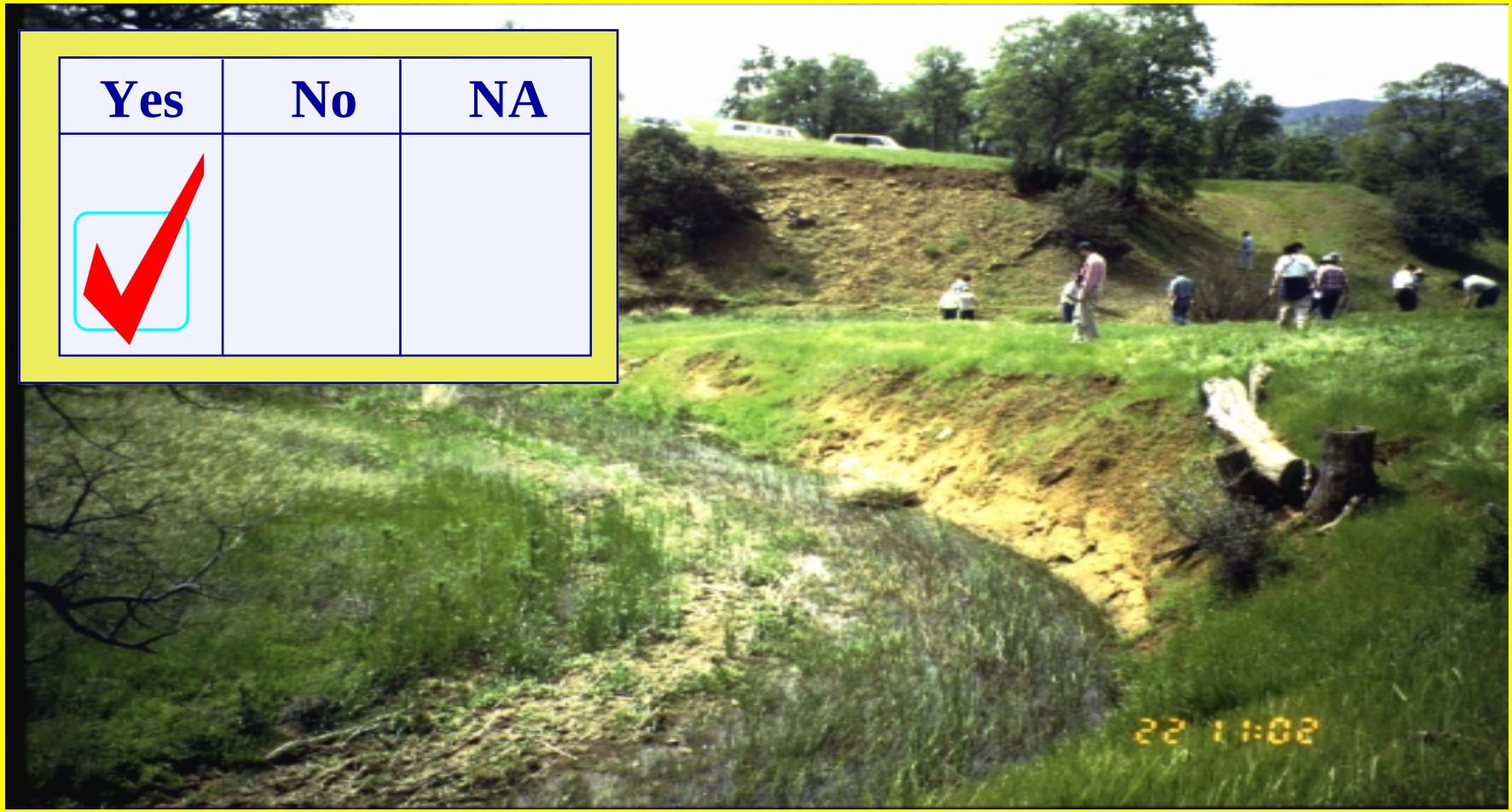
Lotic Checklist - Hydrologic Factors

Yes	No	NA

4) Riparian-wetland area is widening or has achieved potential extent.

4) Riparian-wetland area is widening or has achieved potential extent

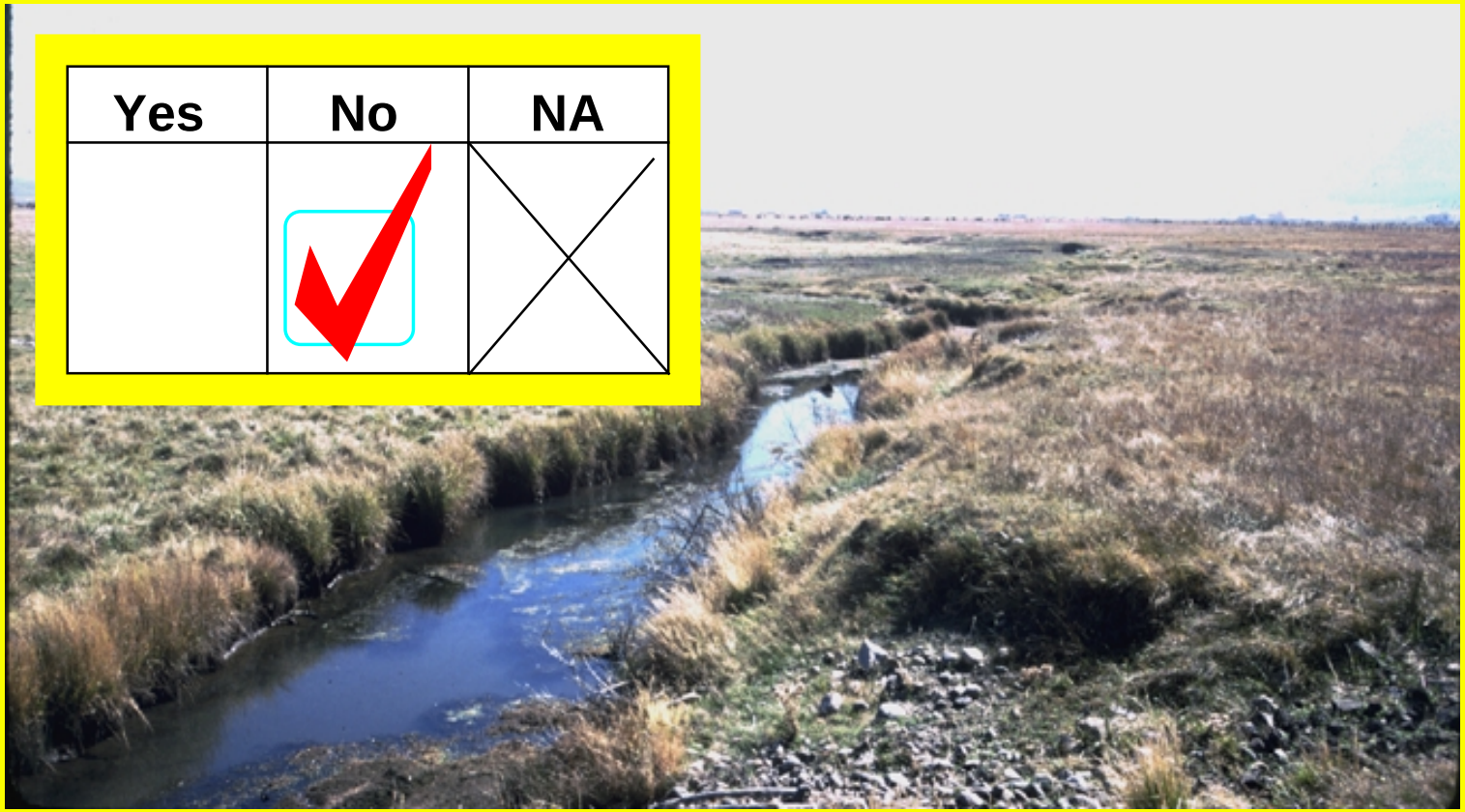
Yes	No	NA
✓		



Upper Stony Creek Watershed, Glenn Co.(1998)

4) Riparian-wetland area is widening or has achieved potential extent

Yes	No	NA
	✓	X



Pasture Near Minden (1989)

Lotic Checklist -
Hydrologic Factors

Yes	No	NA
		X

5) Upland watershed is <u>not</u> contributing to riparian-wetland degradation

Watershed Impacts

- Dams and Diversions
- Historic and/or Active Mining
- Timber Harvest Activities
- Roads
- Grazing
- Wildfire

Watershed Impacts

Grazing

Watershed Impacts

Logging/Roads

Watershed Impacts

Historic/Active Mining

Watershed Impacts

Wildfire

Painted Cave Fire (7/90) Santa Barbara Co.

Watershed Impacts

Dams/Diversions

Lentic Checklist

Hydrologic Factors

Lentic Checklist -

Hydrologic Factors

1. Riparian-wetland area is saturated at or near the surface or inundated in “relatively frequent” events.
2. Fluctuation of water levels is not excessive.
3. Riparian-wetland area is enlarging or has achieved potential extent
4. Upland watershed is not contributing to riparian-wetland degradation.

Lentic Checklist - Hydrologic Factors

5. Water quality is sufficient to support riparian-wetland plants.
6. Natural surface or subsurface flow patterns are not altered by disturbance (i.e. hoof action, dams, dikes, trails, roads, rills, gullies, drilling activities.
7. Structure accommodates safe passage of flows (e.g. no headcut affecting dam or spillway).

PFC Standard Checklist - Vegetative Factors

6. **Diverse Age-Class Distribution (recruitment for maintenance/recovery)**

6) Diverse Age-class Distribution of Riparian-wetland Vegetation (recruitment for maintenance/recovery)

Yes	No	NA
✓		

Phoenix Lake Watershed, Tuolumne Co.(1998)

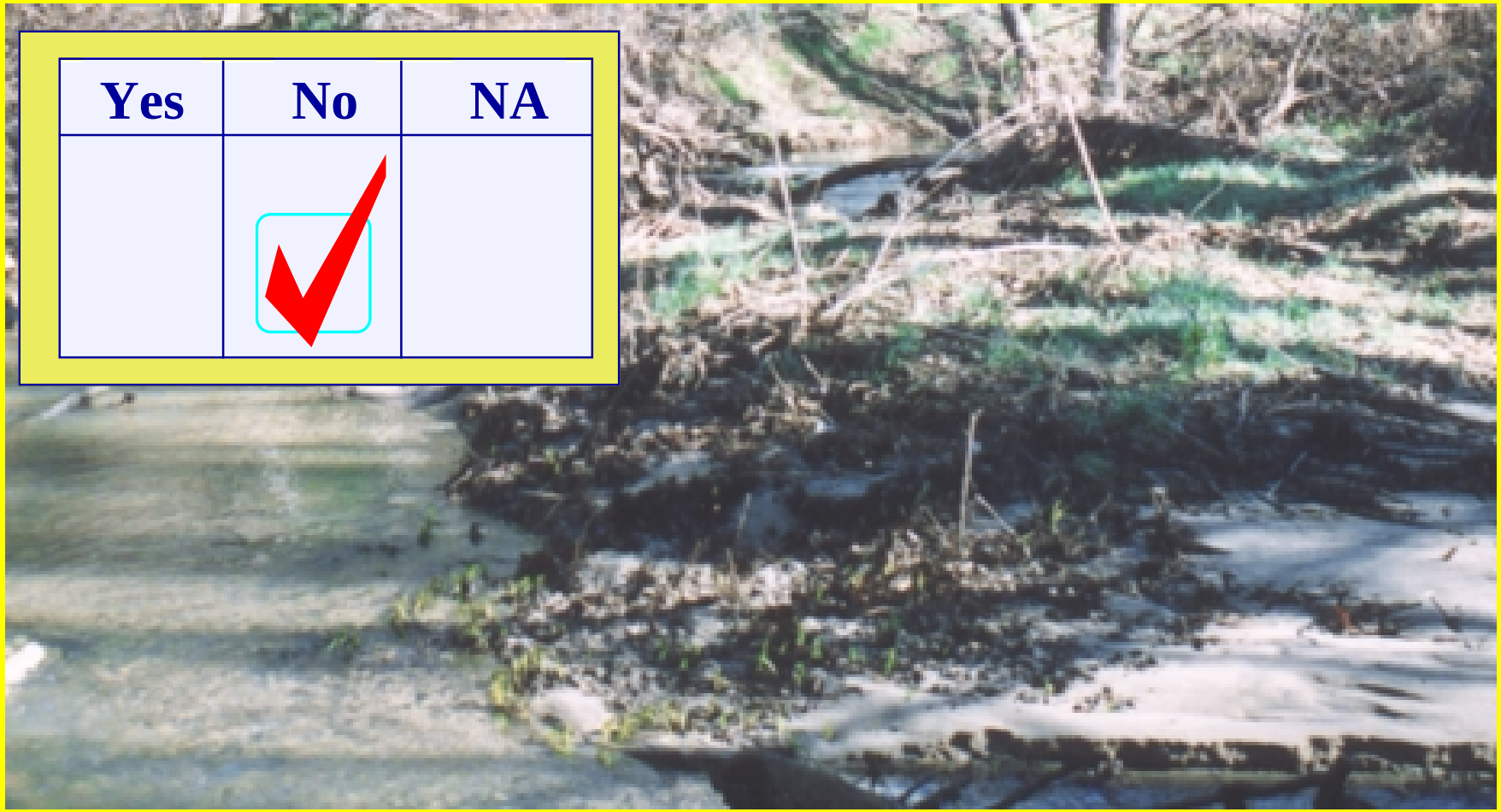
6) Diverse Age-class Distribution of Riparian-wetland Vegetation (recruitment for maintenance/recovery)

Yes	No	NA
✓		

Calaveras Big Trees SP, Calaveras Co.(1998)

6) Diverse Age-class Distribution of Riparian-wetland Vegetation (recruitment for maintenance/recovery)

Yes	No	NA
	✓	

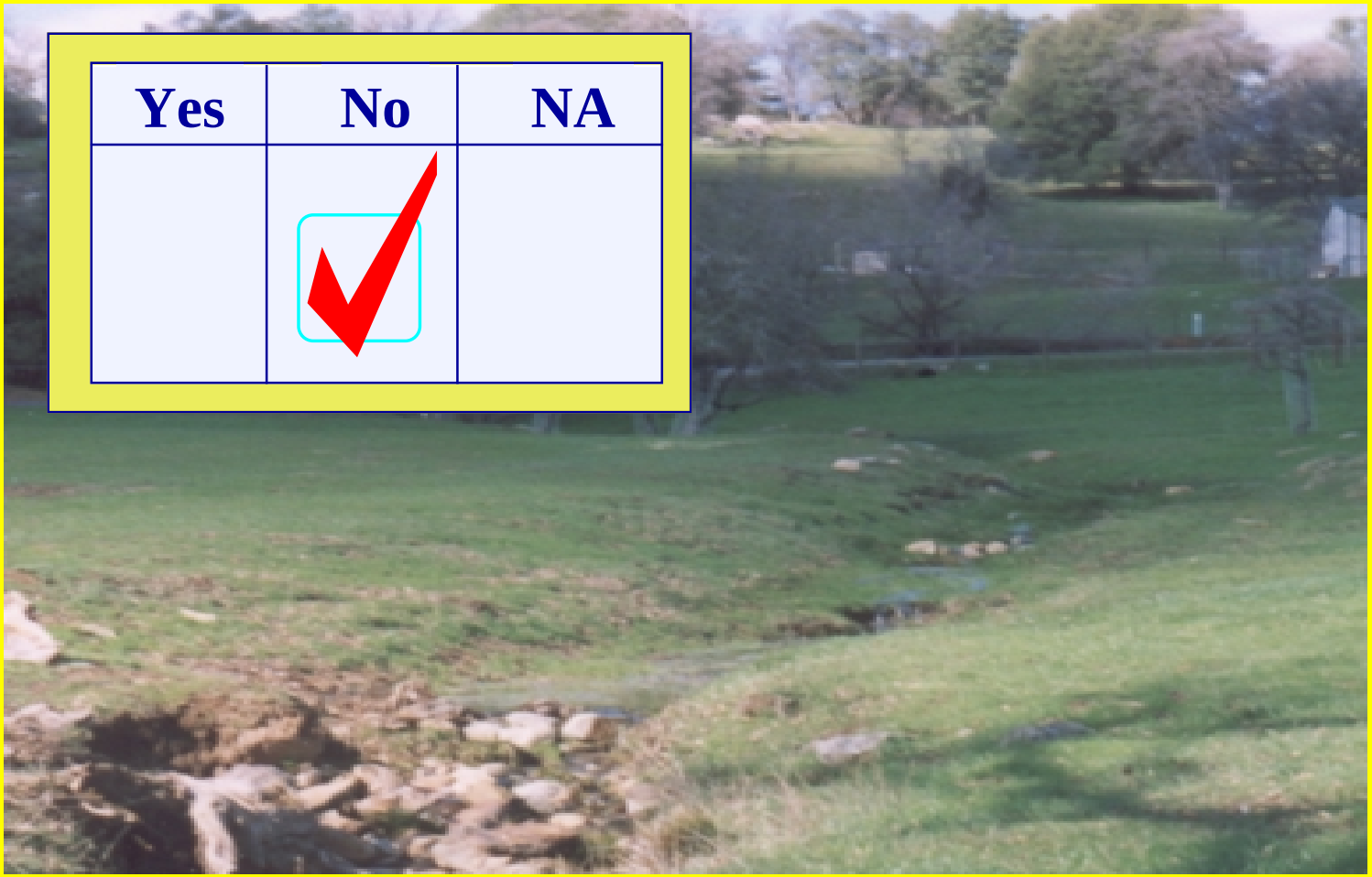


Phoenix Lake Watershed, Tuolumne Co.(1998)

PFC Standard Checklist - Vegetative Factors

7. Diverse Composition of Vegetation (for maintenance/recovery)

7) Diverse Composition of Riparian-wetland Vegetation (for maintenance/recovery)



Yes	No	NA
	✓	

Standard Area, Tuolumne Co.(1998)

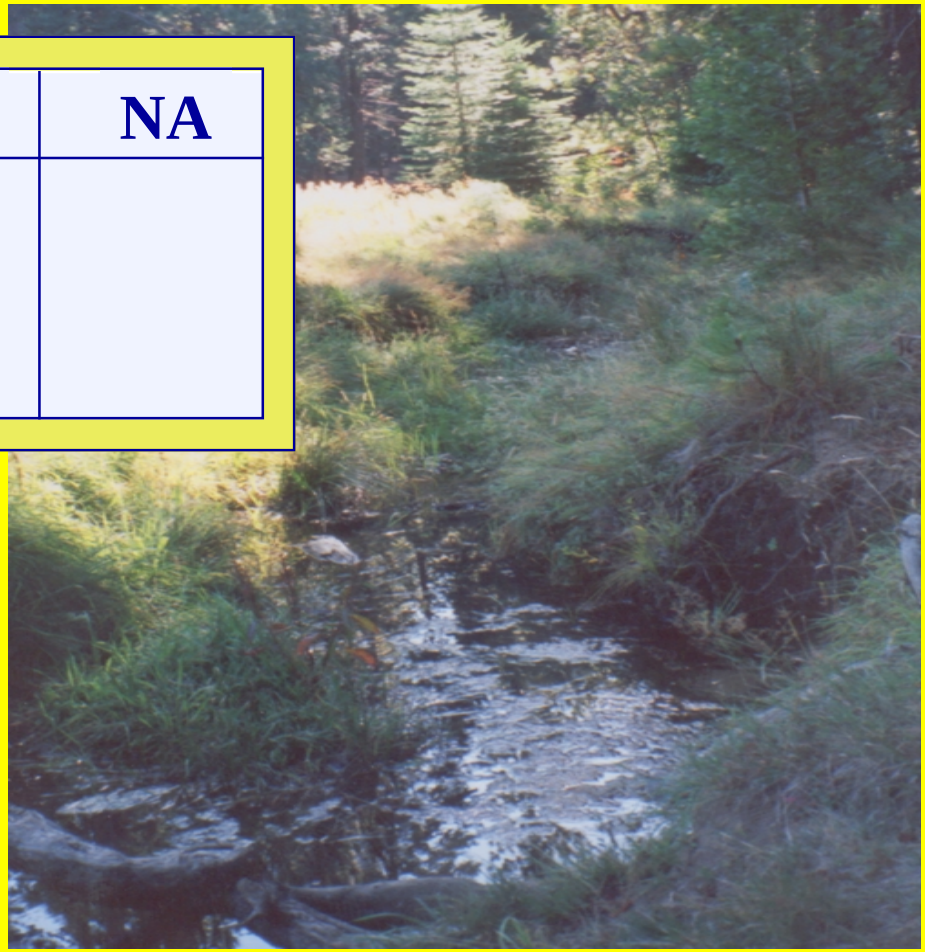
7) Diverse Composition of Riparian-wetland Vegetation (for maintenance/recovery)

Yes	No	NA
	✓	

Calaveras Big Trees SP, Calaveras Co.(1998)

7) Diverse Composition of Riparian-wetland Vegetation (for maintenance/recovery)

Yes	No	NA
✓		



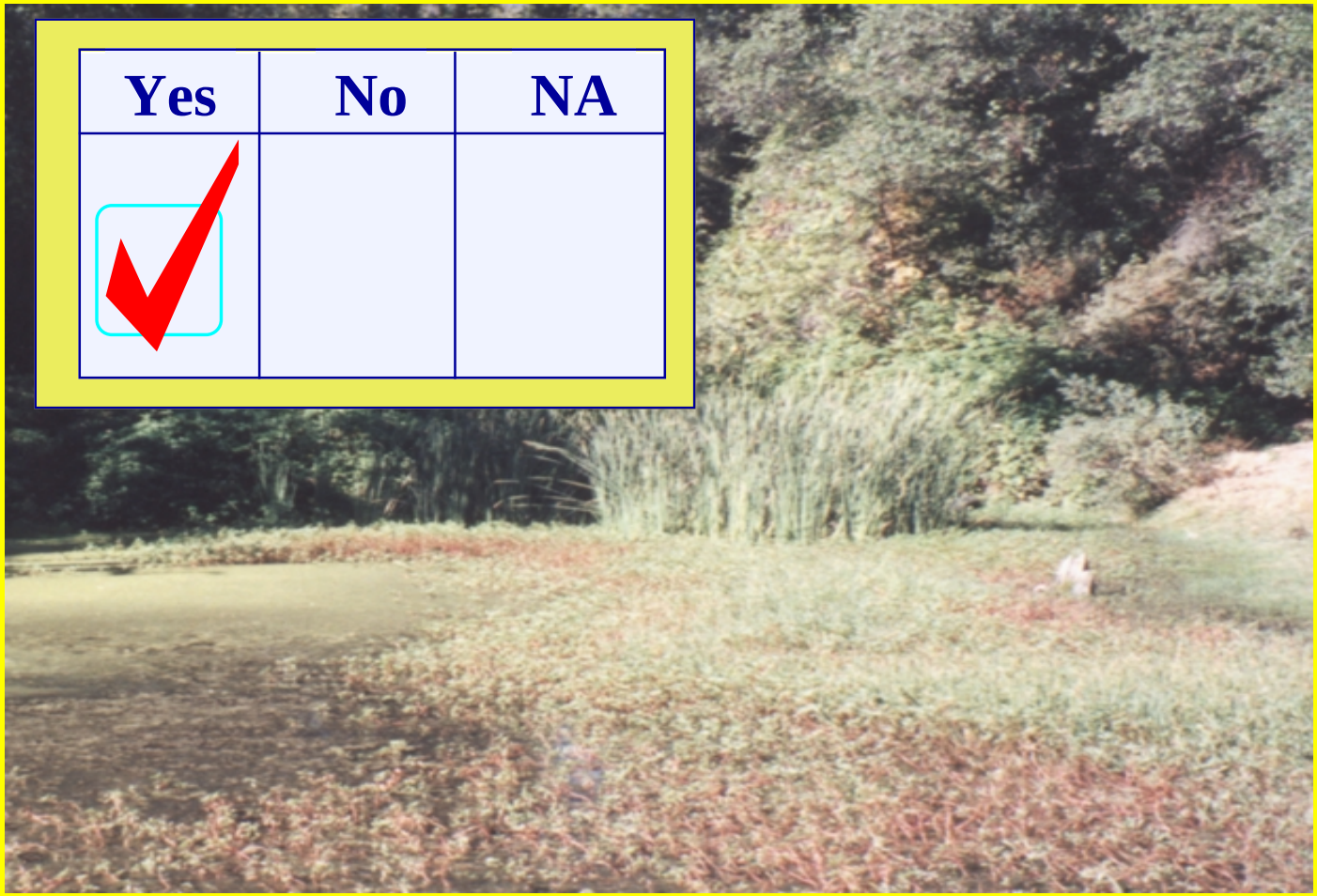
Calaveras Big Trees SP, Calaveras Co.(1998)

PFC Standard Checklist - Vegetative Factors

8. Species present indicate maintenance of riparian-wetland soil moisture characteristics

8) Species Present Indicate Maintenance of Riparian-wetland Soil Moisture Characteristics

Yes	No	NA
✓		



Near Highway 49, Calaveras Co.(1998)

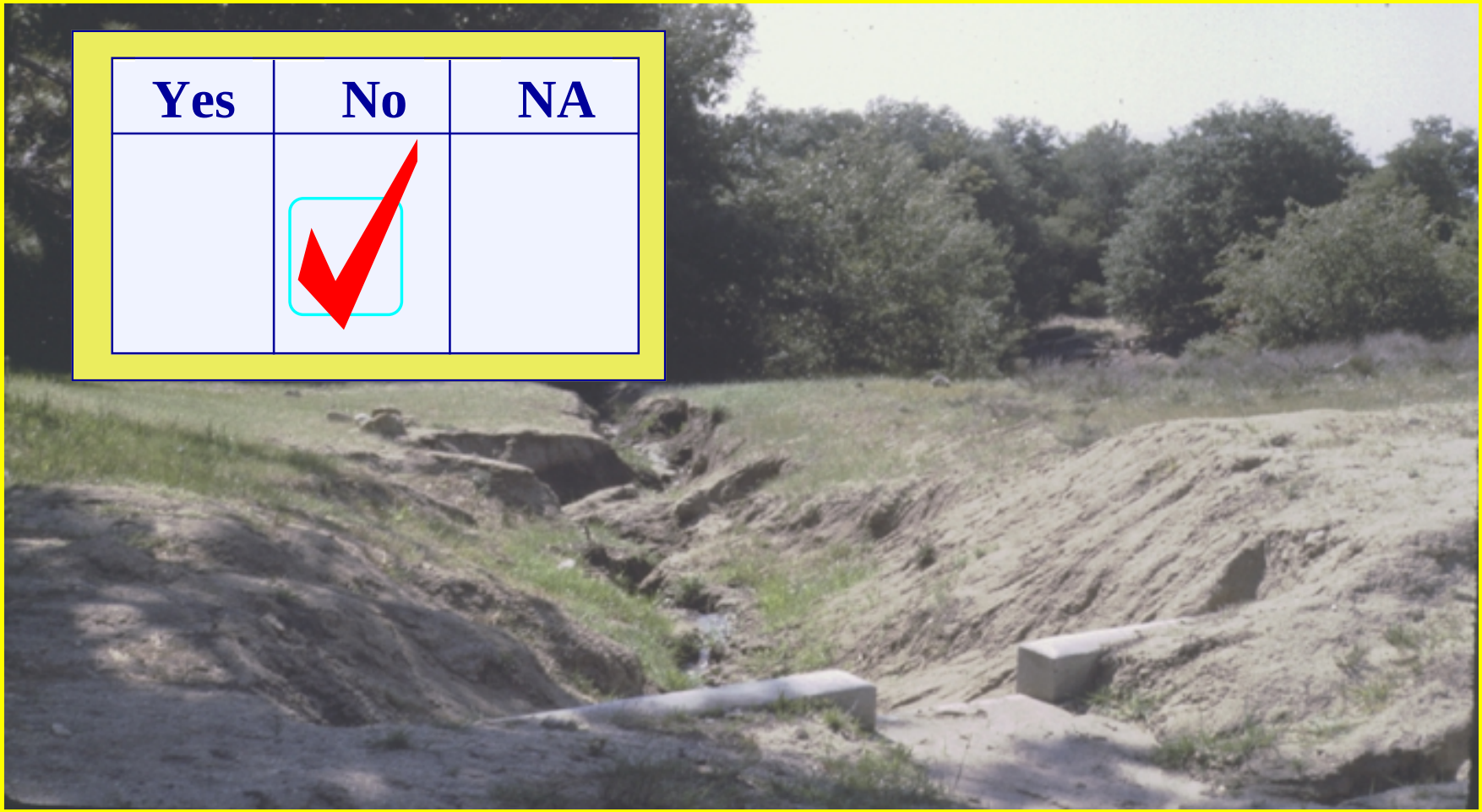
8) Species Present Indicate Maintenance of Riparian-wetland Soil Moisture Characteristics

Yes	No	NA
	✓	

Near Highway 49, Calaveras Co.(1998)

8) Species Present Indicate Maintenance of Riparian-wetland Soil Moisture Characteristics

Yes	No	NA
	✓	



PFC Standard Checklist - Vegetative Factors

9. **Streambank Vegetation is Comprised of those Plants or Plant Communities that have Root Masses Capable of Withstanding High Streamflow Events**

9) Streambank Vegetation is Comprised on those Plants or Plant Communities that have Root Masses Capable of Withstanding High Streamflow Events

Yes	No	NA
	✓	

Calaveras Big Trees SP, Calaveras Co.(1998)

9) Streambank Vegetation is Comprised on those Plants or Plant Communities that have Root Masses Capable of Withstanding High Streamflow Events

Yes	No	NA
✓		

Stony Cr. Watershed, Glenn Co (1998)

9) Streambank Vegetation is Comprised on those Plants or Plant Communities that have Root Masses Capable of Withstanding High Streamflow Events

Yes	No	NA
✓		

PFC Standard Checklist - Vegetative Factors

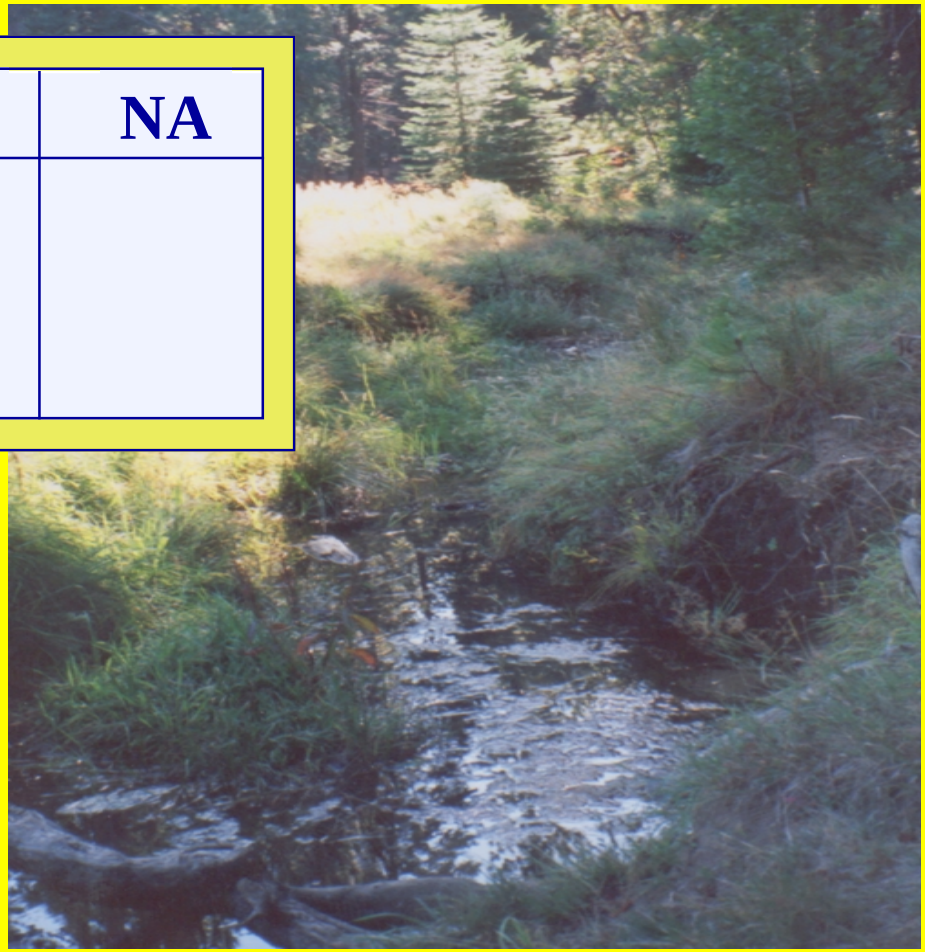
10. Riparian Plants

Exhibit

High Vigor

10. Riparian Plants Exhibit High Vigor

Yes	No	NA
✓		



Calaveras Big Trees SP, Calaveras Co.(1998)

10. Riparian Plants Exhibit High Vigor

Yes	No	NA
	✓	

Calaveras Big Trees SP, Calaveras Co.(1998)

PFC Standard Checklist - Vegetative Factors

11. Adequate Vegetative Cover is Present to Protect Banks and Dissipate Energy During High Flows

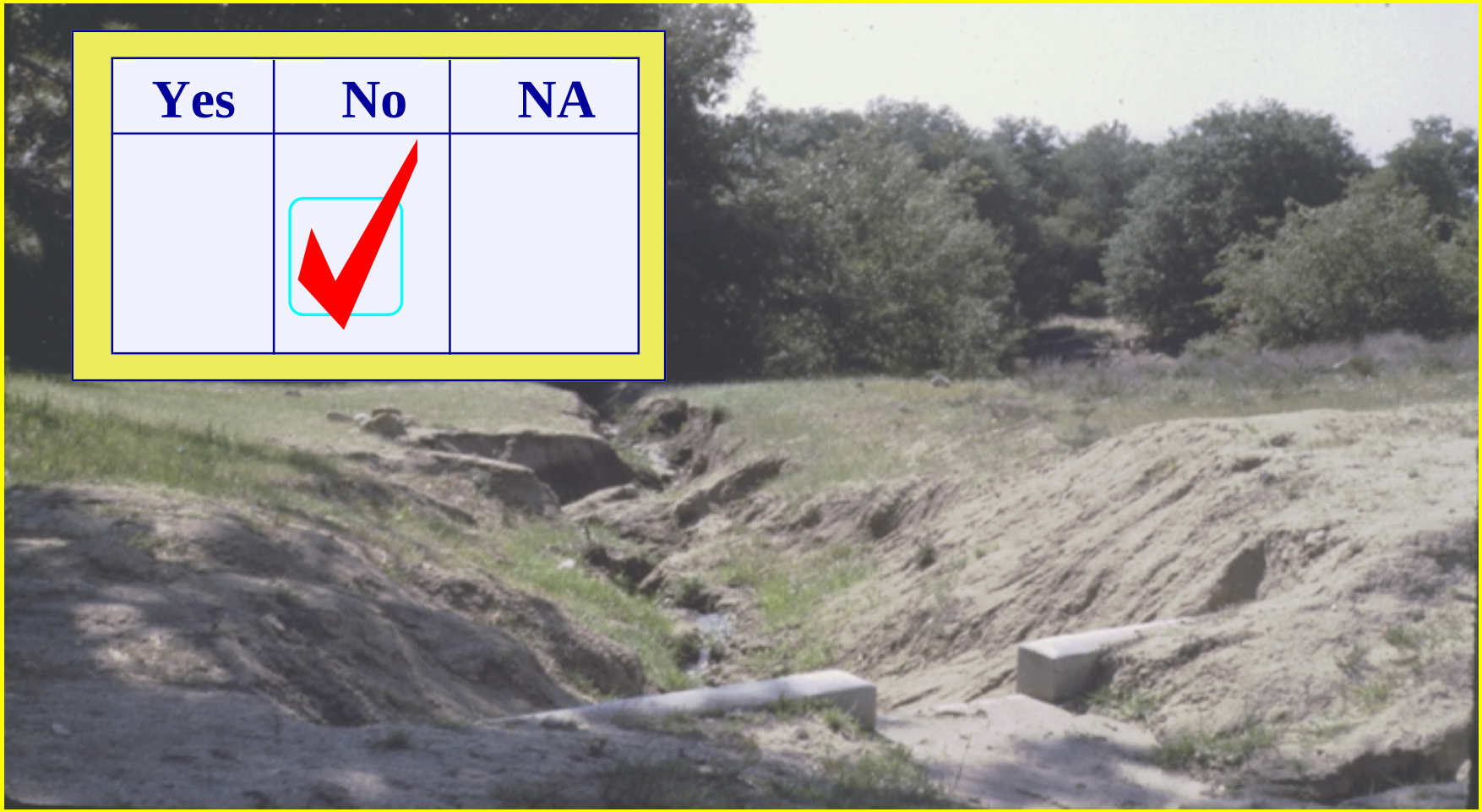
11. Adequate Vegetative Cover is Present to Protect Banks and Dissipate Energy During High Flows

Yes	No	NA
✓		

Calaveras Big Trees SP, Calaveras Co.(1998)

11) Adequate Vegetative Cover is Present to Protect Banks and Dissipate Energy During High Flows

Yes	No	NA
	✓	



11) Adequate Vegetative Cover is Present to Protect Banks and Dissipate Energy During High Flows

Yes	No	NA
	✓	

PFC Standard Checklist - Vegetative Factors

12. Plant Communities in the Riparian Area are an Adequate Source of Coarse and/or Large Woody Debris

12) Plant Communities in the Riparian Area are an Adequate Source of Coarse and/or Large Woody Debris

Yes	No	NA
✓		

Phoenix Lake Watershed, Tuolumne Co.(1998)

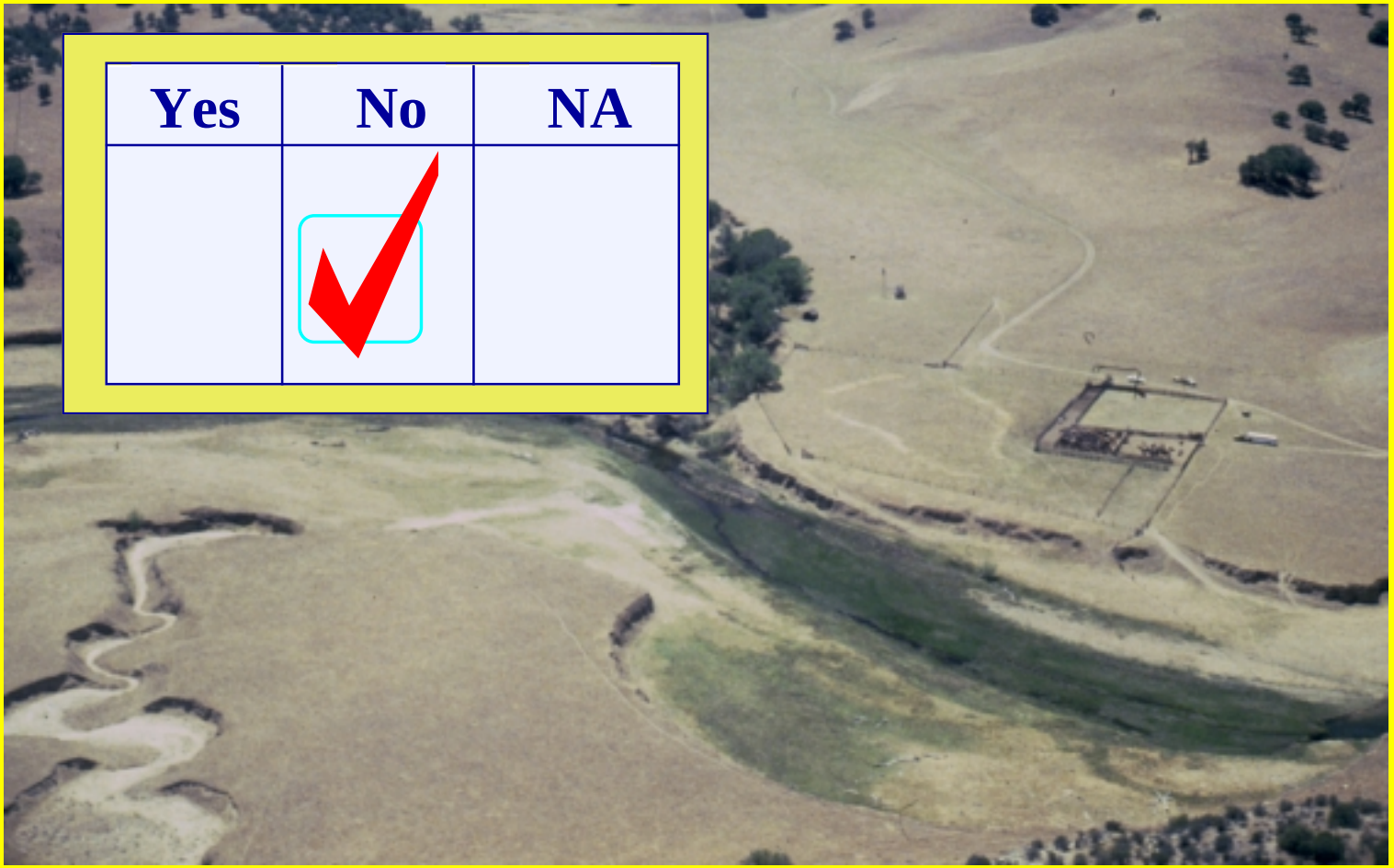
12) Plant Communities in the Riparian Area are an Adequate Source of Coarse and/or Large Woody Debris

Yes	No	NA
	✓	

Standard Road, Tuolumne Co.(1998)

12) Plant Communities in the Riparian Area are an Adequate Source of Coarse and/or Large Woody Debris

Yes	No	NA
	✓	



San Luis Obispo Co.(1998)

PFC Standard Checklist - Erosion/Deposition Factors

13. Floodplain and Channel Characteristics (i.e. rocks, overflow channels, coarse and/or large woody debris) Adequate to Dissipate Energy

PFC Standard Checklist - Erosion/Deposition Factors

14. Point Bars are Revegetating

PFC Standard Checklist - Erosion/Deposition Factors

15. Lateral Stream Movement is Associated with Natural Sinuosity

PFC Standard Checklist - Erosion/Deposition Factors

16. System is Vertically Stable

PFC Standard Checklist - Erosion/Deposition Factors

17. Stream Is In Balance With the Water and Sediment Being Supplied by the Watershed (i.e. no excessive erosion or deposition)

Summary Determination

Functional Rating:

_ Proper Functioning
__ Functional At Risk
__ Nom Functional
__ Unknown

Trend for Functional - At Risk:

__ Upward
__ Downward
__ Not Apparent

Are factors contributing to unacceptable conditions outside the control of the manager?

Yes __
No __

If yes, what are those factors?

__ Flow regulations
__ Mining activities
__ Upstream channel conditiions
__ Channelizaton
__ Road encroachment
__ Oil field water discharge
__ Augmented flows
__ Other (specify)

PFC - California

Summary

Is PFC a potentially useful tool to help manage local resources?

The PFC Methodology:

- Assesses the physical functioning and reslience of a riparian-wetland area;
- Is a useful tool for watershed analysis;
- Is a useful tool for prioritizing restoration and monitoring activities;
- Is a communication tool that provides a common platform for collaborative management planning;

So what from here?

- The assessment process makes us look at interrelationships of landform/soils, vegetation, and water.
- It provides information concerning specific attributes that should be addressed
- Helps define monitoring needs
- Provides a common platform for collaborative management planning